

THE EFFECT OF A TELEMENTORING PROGRAM ON BEGINNING
TEACHER SELF-EFFICACY

Linda S. Muehlberger, B.S., M.Ed.

Dissertation Prepared for the Degree of
DOCTOR OF EDUCATION

UNIVERSITY OF NORTH TEXAS

August 2007

APPROVED:

Johnetta Hudson, Major Professor
Mary Ann Coe, Committee Member
Frances van Tassell, Committee Member
Leslie Patterson, Chair of the Department of
Teacher Education and Administration
M. Jean Keller, Dean of the College of
Education
Sandra L. Terrell, Dean of the Robert B.
Toulouse School of Graduate Studies

Muehlberger, Linda S., *The effect of a telementoring program on beginning teacher self-efficacy*, Doctor of Education (Educational Administration), August 2007, 144 pp., 9 tables, 1 illustration, references, 122 titles.

This study examined whether the telementoring program had a positive impact on beginning teacher self-efficacy. Telementoring is an adaptation of mentoring, using telecommunications technology as the means to establish and maintain mentoring relationships between the participants. The program was intended to create an atmosphere of community; to provide expert training in the profession; to retain good teachers; and to offer support for the new teacher in times of self-doubt.

A quasi-experimental design and mixed methods measures were used to determine the effect of a telementoring program on beginning teacher self-efficacy. Participants were members of a district induction/mentoring program. An experimental group of 20 first-year teachers that participated in a supplemental telementoring program were compared to 20 first-year teachers who did not.

The Teachers' Sense of Efficacy Scale was used to collect data on beginning teacher self-efficacy. A pretest was administered prior to the treatment and members completed a post-test at the conclusion of the study. Results were analyzed using a one-way analysis of variance. The experimental and control group results from both assessments were measured and compared. No statistically significant differences were found between the experimental group that participated in the telementoring program and those in the control group who did not.

Messages posted to a discussion board were analyzed by comparing concerns of beginning teachers in this study to concerns of beginning teachers found in current

literature. A compilation of concerns served as a comparison framework. Participants in this study discussed many of the same issues and concerns found in current literature.

Although statistically significant results were not found, discussion board postings suggest that telementoring is an effective form of mentoring and provides beginning teachers a forum for collegiality and support, which contributes to self-efficacy.

Copyright 2007

By

Linda S. Muehlberger

ACKNOWLEDGMENTS

Special thanks to my major professor, Dr. Johnetta Hudson, for her leadership and guidance through this educational pursuit and to committee member, Dr. Mary Ann Coe, for generously sharing her expertise on the topic of my research. I value the support that Dr. Coe has provided since the beginning of this journey. I am also truly grateful to committee member, Dr. Frances van Tassell, for her willingness to join the committee and I appreciate her contribution of knowledge.

It was my privilege to be a member of the MSU/UNT Cohort, which offered a great opportunity for professional and personal development. The collegial relationships formed among cohort members made this a very productive and enjoyable experience. I hold fond memories of these fine educators and our time spent together. Thank you one and all.

This dissertation would not have been possible without several important people. Thank you to the professors who challenged me to rise to an elevated level in educational administration, Dr. Charlie Xu and Dr. Matthew Capps for lending their expertise in statistical analysis, Mr. J. D. Allen, for doing more than his fair share and never losing his smile, Patti Dale, not only for providing formatting and writing know-how, but for her calm reassuring demeanor, which provided comfort more than once along the way, and finally, Ms. Robin Atteberry, for her help and assistance.

Words cannot express the gratitude that I have for family members and friends who offered their support throughout this process. Many thanks to my husband, Mike, for his unwavering support and for encouraging me to be the best that I can be, my daughters Mindy and Megan, son-in-law, Guy, and the light of my life, Michael, for

cheering me on, as I pursued this dream.

I dedicate this dissertation to my late mother, Georgia Samarjian, my first teacher, ally, and biggest fan. Her unconditional love continues to be a source of inspiration.

TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS.....	iii
LIST OF TABLES.....	vii
LIST OF ILLUSTRATIONS.....	viii
Chapter	
1. INTRODUCTION.....	1
Background of the Study	
Beginning Teacher Attrition	
Beginning Teacher Support	
Induction and Mentoring Programs	
Beginning Teacher Self-Efficacy	
Telementoring	
Problem Statement	
Professional Significance of the Study	
Delimitations of the Study	
Limitations of the Study	
Definition of Terms	
Summary	
2. REVIEW OF RELATED LITERATURE.....	23
Historical Perspective	
Why Retention Matters	
Induction and Mentoring Programs	
Beginning Teacher Self-Efficacy	
Mentoring in the Age of Technology	
Summary	
3. METHODOLOGY.....	61
Research Questions and Hypothesis	
General Perspective	

	Research Context	
	Research Participants	
	Instrumentation	
	Survey Instrument	
	Discussion Forum Transcripts	
	Procedures Used	
	Data Analysis	
	Summary	
4.	PRESENTATION OF RESULTS	77
	Data Collection	
	Participant Demographics	
	Descriptive Statistics	
	Hypothesis 1	
	Hypothesis 2	
	Hypothesis 3	
	Experimental Group Discussions	
	Summary	
5.	CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS.....	95
	Summary of Major Findings	
	Discussion of Major Findings	
	Implications for Practice	
	Recommendations for Further Study	
	Summary	
	APPENDICES	109
	REFERENCE LIST.....	130

LIST OF TABLES

		Page
1.	TSES (Long Form) Item Analysis of Correlated Factors.....	67
2.	TSES Reliabilities	68
3.	Population Demographics	79
4.	Descriptive Statistics for Self-Efficacy	81
5.	Analysis of Variance (ANOVA) for Self-Efficacy – Pretest.....	82
6.	Analysis of Variance (ANOVA) for Self-Efficacy – Post-test	84
7.	Analysis of Variance (ANOVA) for Three Sub-scales of Self-Efficacy – Post-test	84
8.	Discussion Board Participation – Fall 2006	87
9.	Areas of Particular Concern for Beginning Teachers (Jonson, 2002).....	87

LIST OF ILLUSTRATIONS

	Page
1. The phases of a first-year teacher's attitude toward teaching (Moir, 1999)	100

CHAPTER 1

INTRODUCTION

This dissertation is a quasi-experimental study of the effect of a telementoring program on beginning teacher efficacy. The study utilized a mixed methods research design in which both quantitative and qualitative methods were used. This first chapter of the dissertation presents the background of the study, specifies the problem of the study, describes its significance, and presents an overview of the methodology used. The chapter concludes by noting the delimitations and limitations of the study and defining some special terms used.

Background of the Study

Newspaper headlines dramatically declare that public schools in the United States are facing a teacher shortage of epic proportions. In the next decade, this country will need two million new teachers (Voke, 2002). The prediction of the high demand for new teachers is attributed to the confluence of several factors including: (1) an anticipated increase in student enrollments; (2) education reform efforts requiring reductions in the numbers of students per classroom; (3) an increase in the numbers of teachers who are expected to retire within the next decade; and (4) teacher attrition (Bradley, 1999; Broughman & Rollefson, 2000; Darling-Hammond, 1997).

Some researchers dispute the conventional wisdom that the shortage exists because there are simply not enough qualified teachers to fill the number of vacant positions. They insist that if only the number of qualified candidates and the number of job openings are considered, there is an overall surplus of trained people. Their contention is that the shortage lies in the distribution of teachers (Hutchinson & Jazzar,

2007; National Association of State Boards of Education (NASBE), 1998).

Growing evidence suggests that there are not enough teachers who are both qualified and willing to teach in urban and rural schools, particularly in those serving low-income students or students of color. Certain geographic regions of the country experience a teacher shortage, especially in particular specialties such as special education, bilingual education, and the sciences (Bradley, 1999; Howard, 2003; NASBE, 1998).

Due to the nature of the shortage, analysts maintain that the policies and initiatives the states and districts have developed to address the problems are misguided. Members of the NASBE (1998) proclaim that programs developed by states to simply attract more people to the profession are not likely to be effective. The opinion of the NASBE (1998) membership is reflected in the following statement:

Most states do not need to recruit more candidates into teacher preparation programs. Most states do not even need to attract higher quality candidates to teaching. What states do need, however, are targeted programs that attract candidates who are willing and able to meet the needs of schools in which they are asked to teach. (p. 13)

The problem is much more complex than the media would lead one to believe, and unless the initiatives developed to address the problem take this complexity into account, at best the problem will not be addressed, and at worst, the solutions may actually exacerbate the situation (Ingersoll, 1998; NASBE, 1998). Recent research confirms what many educators have long suspected – a strong link between the traditionally high rates of beginning teacher attrition and the teacher shortages that seem to perennially plague schools (Ingersoll, 2001; National Commission on Teaching and America's Future (NCTAF) 2005; Portner, 2005).

An analysis of national data on teacher attrition shows that widely publicized school staffing problems are not solely, or even primarily the result of too few teachers being recruited and trained. Instead, the data indicate that school staffing problems are, to a significant extent, a result of a revolving door, where large numbers of teachers depart teaching long before retirement (Ingersoll, 2001; Ingersoll & Kralik, 2004; Ingersoll & Smith, 2003; U.S Department of Education, 2000).

The data on new teacher attrition suggests that efforts to recruit more teachers, which have been the focus of much policy, will not by themselves solve the staffing problems plaguing schools. The solution must also include teacher retention. In short, recruiting more teachers will not solve the teacher crisis if 40% to 50% of these teachers leave in a few short years (Clement, 2002; Ingersoll & Smith, 2003; Merrow, 1999; Pan & Mutcher, 2000).

Ingersoll and Smith (2003) create a visual image of the new teacher attrition predicament as a bucket rapidly losing water because of holes in the bottom. They say, "Pouring more water into the bucket will not do any good if we do not patch the holes first" (p. 32-33). In a similar manner, John Merrow (1999) compares the teacher attrition problem to a swimming pool with a serious leak.

You wouldn't expect that pouring more and more water into the pool would in time fix the leak, but that's precisely the approach we are taking toward the so called teacher shortage. The response has been to recruit more people into teaching, using a variety of strategies including public service announcement campaigns, \$100 million in federal money, hiring bonuses, help with mortgages, and recruitment trips to Spain and other distant lands. Yet the pool keeps leaking water because no one is paying attention to the leaks. That is, we're misdiagnosing the problem as *recruitment* when it's really *retention*. Simply put, we train teachers poorly and then treat them badly, so they leave in droves. (p. 64)

Beginning Teacher Attrition

Even more alarming than the attrition rates themselves are data from an in-depth survey indicating that the most intelligent and effective teachers, the teachers that policy makers are most interested in retaining, leave the profession at the highest rates (Schlechty & Vance, 1983; Smith, 1993). Data gathered by interviewing superintendents in the Midwestern United States led Hare and Heap (2001) to report that from 75% to 100% of the teachers leaving classrooms are deemed *highly effective* or *effective*.

Boser (2000) found that new teachers who scored in the top quartile on their college entrance exams are twice as likely to leave teaching as those with lower scores. In another investigation of beginning teacher attrition conducted within San Diego County, California, Mathison (1996) conveys the story of a teacher, who received one of only six national education outstanding student teacher awards presented in 1988, leaving the profession after her first year. He states, "The loss of such a potentially exceptional teacher clearly indicates that something is wrong" (p. 7).

All occupations, of course, experience some loss of new entrants, either voluntarily, because newcomers decide to not remain, or involuntarily because employers deem them to be unsuitable. Teaching has long had extraordinary high rates of attrition among newcomers. As a consequence of difficulties that they experience as newcomers, beginning teachers abandon the classroom at high rates (Gold, 1996; Gordon & Maxey, 2000; Ingersoll, 2003; Richardson, 2003).

Of those who graduate from college or university teacher preparation programs and are certified to teach in any given year, an estimated 28% of these newly qualified teachers do not even apply for teaching jobs. Research provides statistics on new

teachers who begin teaching in any given year as follows:

- 9.3% quit without finishing their first year (Fideler & Haselkorn, 1999);
- 15% leave at the end of their first year (National Center for Educational Statistics (NCES, 1999);
- 20% leave within the first two years (NCES, 2000);
- 33% leave within the first three years (Darling-Hammond, 1997; NCTAF, 1996, U. S. Department of Education, 1997); and
- 50% leave within the first five years (Hare & Heap, 2001; Huling-Austin, 1992).

Particularly problematic for the retention of new teachers is the lack of support that they receive from their schools. Beginning teachers interviewed by researchers from the 1999 project on the next generation of teachers indicate that they receive little or no encouragement from their new schools. Although new faculty members are often formally assigned mentors, they actually have few and limited opportunities to interact with those mentors.

According to Jonson (2002), additional areas of concern frequently listed by beginning teachers are, learning how to effectively work with a variety of students, while in the throes of developing a professional identity and navigating new school culture and teacher isolation. While elementary and secondary teaching involves intensive interaction with youngsters, the work of teachers is largely done in isolation from colleagues.

Once in their own classroom, beginning teachers rarely have the opportunity to observe other teachers in action or to turn to another professional when a question

arises. From the beginning, they are the sole professionals in their domain. Without the specific assignment of a mentor to work with them, they may find themselves completely independent of all other adults in their new career (Heider, 2005; Jonson, 2002).

Beginning Teacher Support

Many professions provide transitional assistance for new members (e.g., residents in medicine, interns in architecture, and associates in law), but historically the education profession has ignored the support needs of its new recruits. Halford (1998) notes, that some observers have dubbed education “the profession that eats its young” (p. 33).

Lortie (1975) contrasts beginning teacher’s early work experience to classical arrangements for apprenticeship. Formal apprenticeship has important cognitive characteristics; the neophyte is ushered through a series of tasks of ascending difficulty and assumes greater responsibility as his technical competence increases. Apprenticeship illustrates the learning principle of a *simple to complex sequence*.

In modern professions based on science and scholarship, the beginning worker may bring theoretical knowledge with him, as does the medical school graduate who has knowledge of the most up-to-date research or the law clerk who has just studied the latest court decisions. Lortie (1975) states, “There is an element of exchange in such instances; the tyro brings *book knowledge* to his masters, and they provide the skills of practice and the wisdom of experience” (p. 72). Unfortunately, the circumstances of the beginning teacher differ, making the transition from student teaching to full responsibility for a classroom on one’s own a major leap in the everyday life of a novice teacher

(Ingersoll, 2003; Lortie, 1975).

One of the striking features of teaching is the abruptness with which full responsibility is assumed. In fact, a young man or woman typically is a student in June and a fully responsible teacher in September (Ingersoll & Smith, 2003; Lortie, 1975). First-year teachers are thrust into the same demanding work environment as veteran teachers as soon as they cross the threshold of the classroom door on the first day of school. Responsibilities, requirements, and expectations are the same for the teacher who enters the classroom the first year or the 30th year (Chase, 2000; Lortie, 1975; Richardson, 2003).

Lortie (1975) describes entry into the teaching profession as, “Beginning teachers are on probation and usually receive more supervision than their experienced colleagues, but their daily tasks are essentially the same. It is no accident that some refer to this as the *sink-or-swim* approach” (p. 60).

The new entrant to education is not allowed to adjust gradually to teaching a full class load and must learn on the job while performing the full complement of teaching duties. Additional assignments are often given to those who need them the least. Many times beginning teachers are the recipients of extra class preparations, difficult students that other teachers do not want, or extra responsibilities, such as monitoring students on the playground, in the lunchroom, or during dismissal from school (Ingersoll, 2001; Jonson, 2002).

An overwhelming workload and lack of support and guidance leave many novice teachers with a feeling of disillusionment and failure. With their idealism shattered, many beginning teachers leave teaching and pursue another career (Halford, 1998).

“When we don’t ease the way into schools, it’s a signal about how people – including teachers, parents, and the kids – are valued,” notes Mary E. Diez, director of the Master of Arts Education program at Alverno College in Milwaukee, Wisconsin as cited in (Halford, 1998, p. 14). Ultimately, students suffer the consequences of inadequate support for beginning teachers.

The quality of the teacher is the single most important factor improving student achievement. An investment in teacher quality needs to start at the earliest stages of a teacher’s career and to continue throughout a professional lifetime (NCTAF, 1996). As United States (U.S.) schools hire more than two million new teachers in the next decade, we have the chance to transform the teaching profession by creating induction programs that nurture new teachers while promoting the highest standards of classroom teaching (Moir, Gless, & Baron, 1999).

In 1997, the United States Secretary of Education included in his initiatives, published in *The Seven Priorities of the United States Department of Education*, “special efforts to retain beginning teachers in their first few years of teaching” (p. 22). That same year in his state of the union address, *Call to Action of American Education in the 21st Century* (1997), President Bill Clinton discussed the issue of ensuring that Americans have the best education in the world. He issued a 10-point call to action for American education in the 21st century. The second point was to “make sure a talented and dedicated teacher is in every classroom” (p. 2). In his speech, he also proclaimed that school districts must “make sure that beginning teachers get support and mentoring from experienced teachers” (p.16).

Induction and Mentoring Programs

Induction and *mentoring* are two words that are often considered synonymous and are used incorrectly. Induction is a process, a comprehensive, coherent, and sustained professional development process that is organized by a school district to train, support, and retain new teachers and seamlessly progresses them into a lifelong learning program (Wong, 2004).

Mentoring is an action. As a component of the induction process, it is what mentors do. A mentor is a single person whose basic function is to help a new teacher. Typically, the help is for survival, not for sustained professional learning that leads to becoming an effective teacher (Wong, 2004). Wong (2003) described induction in this way:

Induction is the process of preparing, supporting, and retaining new teachers. Induction includes all efforts put forth to encourage new teachers and to acculturate them to teaching. Strong induction programs introduce novices to the responsibilities, missions, and philosophies of their schools, and treat teachers as lifelong learners from their very first day of teaching. (p. 48)

Those in education find that experienced teachers, who serve as mentors, provide encouragement and assistance to new teachers and help them to stay motivated and enthusiastic as they perfect their skills and develop confidence. Induction and mentoring programs foster nurturing environments for beginning teachers, reduce teacher isolation, and inspire teachers to remain in the profession (Darling-Hammond 2003; Heider, 2005).

Meta-analyses of high-quality induction programs show a 15% reduction in overall teacher attrition rates by the third year of professional practice. Even though there is evidence that participation in such programs can reduce attrition rates by up to

two-thirds, statistics from the 2000 United States Department of Education report show that a mere 44% of teachers participate in a formal first-year mentoring program (NCTAF, 2003; Portner, 2005). In recent years state regulations have given impetus to the widespread creation of induction and mentoring programs. In 2004, 33 states required mentoring programs for new teachers.

Effective teacher induction programs recognize the needs of new teachers by providing special support in the critical first years of teaching. Mentors, experienced teachers who work with the same content area or grade level, are a key component of strong induction programs. Skilled mentors help novices navigate the difficult early years of teaching and perfect their teaching skills by providing regular support, instructional guidance, and encouragement (NCTAF, 2003).

The goals of induction programs, as they apply to new teachers, are to create an atmosphere of community, to provide expert training in the profession, to retain good teachers, and to offer support for the new teacher in times of self-doubt. The overall objective of teacher mentoring programs is to provide newcomers with a local guide, but the particulars in regard to character and content of these programs themselves widely vary (Johnson, Birkeland, Kardos, Kauffman, Liu, & Peske, 2001).

The structure of induction programs is diverse and varies in (a) duration and intensity, and (b) participation and purpose. Participation in induction programs can range from a single meeting between mentor and mentee at the beginning of a school year, to a highly structured program involving frequent meetings over a few years between mentors and mentees who are provided with release time from their normal teaching schedules (Ingersoll & Kralik, 2004).

In addition to duration and intensity, induction programs vary according to the numbers of new teachers they serve. Some include anyone new to a particular school, even those with previous teaching experience, while others focus solely upon inexperienced candidates new to teaching. Programs can also differ according to their purpose. The success of school-based induction programs hinges on how teachers work together. The principal plays an integral role in developing school-wide norms that provide opportunities for teachers with various levels of experience to interact (Johnson, et al., 2001).

After studying 50 teachers in Massachusetts, Birkeland and Johnson (2002) report, “Our work suggests that schools would do better to rely less on one-to-one mentoring and, instead, develop school-wide structures that promote the frequent exchange of information and ideas among novice and veteran teachers” (p. 608). It is at the school site, rather than at the district level, where key factors influencing new teachers’ experiences converge; it is there that induction efforts should be centered (Johnson, et al., 2001).

Well-matched mentors, curriculum guidance, collaborative lesson planning, peer observation, and inspired leadership all support new teachers in ways that recruitment incentives never can. Experienced colleagues can serve as a sounding board and assure beginners that their experience is normal, offer sympathy and perspective, and provide advice to help reduce the inevitable stress of the first year in the classroom (Stansbury & Zimmerman, 2002).

Much has been written about the use and value of mentoring novice teachers as part of induction programs. Mentors and new teachers working together to improve

teaching and learning can serve as a model of professional development. Participation in an induction program is valuable not only for the novice, but also for the veteran teacher, in that it positively affects teacher self-efficacy for both (Brennan, Thames, & Roberts, 1999; Darling-Hammond & McLaughlin, 1996).

Beginning Teacher Self-Efficacy

Self-efficacy, as defined by Costa and Garmston (2002), is “a belief that one’s work will make a difference” (p. 126). It is an attribute that is related to being optimistic, confident, and knowledgeable. Generally, efficacious people are resourceful and engage in cause and effect thinking. They devote energy to challenging tasks, set challenging goals, and persevere in the face of barriers and occasional failure (Costa & Garmston, 2002; Gibson & Dembo, 1984).

Bandura (1977) delineates teacher self-efficacy as intellectual activity by which one forges one’s beliefs about his or her ability to achieve a certain level of accomplishment. Teachers’ self-efficacy has a direct link to the way students perform in the classroom. Research indicates that high teacher self-efficacy is a prerequisite for improved student learning (Costa & Garmston, 2002; Dembo & Gibson, 1985; Tschannen-Moran & Woolfolk Hoy, 2002; Woolfolk & Hoy, 1990; Yost, 2002).

Self-efficacy beliefs affect the effort teachers invest in teaching, the goals they set, and their level of aspiration. Teachers with a strong sense of self-efficacy tend to exhibit greater levels of planning, organization, and enthusiasm (Tschannen-Moran & Woolfolk Hoy, 2002). A teacher with high self-efficacy tends to provide the most beneficial learning environment for his or her students. Yost (2002) offers the following example: a physical educator with a heightened sense of personal teaching self-efficacy

is assured that when she applies a contemporary instructional strategy, her students will, in fact, acquire a complex motor skill.

Although few studies have looked at the development of self-efficacy beliefs among novices, it seems that efficacy beliefs of first-year teachers are related to stress and commitment to teaching, as well as satisfaction with support and preparation. Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) contend that novice teachers who complete their first year with a high sense of teacher self-efficacy find greater satisfaction in teaching, have a more positive reaction to teaching, and experience less stress.

Mulholland and Wallace (2001) assert that the most powerful influences on the development of teachers' sense of self-efficacy are experiences during student teaching and the induction year. Tschannen-Moran, et al. (1998) and Capa (2005) agree that self-efficacy may be the most malleable early in learning, thus the first years of teaching could be critical to the long-term development of teacher self-efficacy. Attention to the factors that support the development of a strong sense of self-efficacy among pre-service and novice teachers is worthwhile because once established, self-efficacy beliefs of experienced teachers seem resistant to change.

Confident new teachers give higher ratings to the adequacy of support received than those who end their year with a shakier sense of their own competence and have a less optimistic view of what a teacher can accomplish. In addition, efficacious beginning teachers consistently rate the quality of their preparation higher and the difficulty of teaching lower than those who were less efficacious (Hall, Burley, Villerne, & Brockmeier, 1992). Novices with high self-efficacy indicate greater optimism that they

will remain in the field of teaching (Birkeland & Johnson, 2002; Hall, et. al., 1992; Peterson, 1994).

Telementoring

Formal mentoring programs can dramatically improve participants' attitudes and feelings of self-efficacy and control, and add a variety of instructional strategies to mentees' classrooms (Huling-Austin, 1990). For this reason, most U. S. school districts now offer some mentoring for new teachers, requiring them to meet with more experienced educators working in their school buildings (Feiman-Nemser, 2001). Yet, new research is showing that the success of such mentoring efforts is severely constrained by supply, scheduling, and school politics (Abbott, 2003).

In many schools, there are simply not enough highly experienced and communicative mentors, especially in already underserved specializations, such as mathematics, science, special and bilingual education. In addition, mentors and mentees are often not released from any of their other duties to meet with each other, limiting the amount of assistance that the novice can receive (Harris, 2006).

In the article that she wrote for *Education Week* on the subject of online support, Borja (2002) offered a quote from Tom Carroll, executive director of the National Commission on Teaching & America's Future – a nonprofit group based in New York City. Carroll made the following statement, "Telementoring is definitely an idea whose time has come and something that's going to go everywhere soon. School districts across the country have tremendous attrition rates of entry-level teachers and providing networked professional communities is one of the most powerful ways to sustain them" (p. 12).

The rapid spread of telecommunications to schools means that a new method of induction support is available to new teachers (Abbott, 2003). Online induction and mentoring support, known as *telementoring* or *e-mentoring*, provides communication between new teacher mentees and experienced teacher mentors via computer mediated communications, such as e-mail, discussion boards, and LISTSERV®¹ (Wighton, 1993).

Online support systems can help novice and experienced teachers overcome many of the limitations inherent in traditional mentoring programs. Used in combination with other online tools and resources, *e-mentoring* may help reduce the rate of teacher attrition while enhancing educators' professional success (Harris, 2006).

The National Education Association (2002-2005) new teacher support initiative includes in its *Ten Tips for Connecting with Your New Teachers* that, technology applications such as e-mail, online forums, and electronic discussion boards are easy, inexpensive ways for inductees to share ideas and concerns, and to encourage each other. E-communication can be very liberating for participants and some of the traditional difficulties in face-to-face mentoring, such as power differences and gender and race issues are simply not present in a virtual environment (Hunt, 2005).

Price and Chen (2003) illustrate the benefits of telementoring, which may include, but are not limited to, the following: First, telementoring can be conducted across vast distances and is not limited to people whose classrooms are across the hall from each other. Second, it has the flexibility of access regardless of time and place. Telementoring is time and place independent, allowing for the varying schedules of participants and providing access and collaboration with experts regardless of the

¹ <http://www.lsoft.com>

geographical location (Heider, 2005). Third, it provides more accessible resources and supports. Information is just a link away. Fourth, it can create a community of sharing and problem solving where every participant in the program has a chance to contribute. Fifth, it increases collaborative opportunities for beginning teachers, mentors, and university professors.

Telementoring is an adaptation of mentoring, using telecommunications technology as the means to establish and maintain mentoring relationships between the participants. Telementoring inherits its attributes from mentoring and involves all forms of expert knowledge transfer (Price & Chen, 2003; Mehlinger & Powers, 2002).

Through telementoring, mentors and novices can pursue a collegial course of action together, involving collaborative planning, peer coaching, mentoring, and at times, action research (Peterson, 1994). As a result of the teachers and their work-study, the Harvard Graduate School of Education (2000) provides the following insight:

The teachers made it clear that continuing collegial interaction benefits both them and their students. It sustains them through difficult times, deepens their understanding of subject matter and pedagogy, supplies them with novel approaches, and allows them to test and compare practices. It encourages cooperative approaches to school change. It promotes high professional standards and a more coherent instructional experience for children. (p. 178)

Joint work and other opportunities to interact can foster collegiality, which decreases the beginning teacher's sense of powerlessness and increases their sense of self-efficacy – the belief that they can affect student learning (Johnson, 1990; Peterson, 1994; Rosenhotz, 1989).

Telementoring provides mentors and beginning teachers the opportunity to develop professional relationships with a focus on in-depth problem solving and planning, ongoing refinement of instruction, and improved teaching as the focus

(Peterson, 1994). Freedom from time and place constraints encourages strong collegial relationships through frequent mentor/mentee interactions. The triple challenges of mentor scarcity, insufficient face-to-face meeting time, and new teachers' disinclination to be fully forthcoming with assigned mentors can be addressed in a new way: by moving some of the support for teacher induction online, outside the realm of school- and district- based politics (Harris, 2006).

As cited in Harris (2006), Schlager, Fusco, Koch, Crawford, and Phillips (2003) said, "New teachers' needs are so variable and immediate that the appropriate combination of expertise, experience, and cultural background is unlikely to reside in one mentor who is available when needed" (p. 2). Why not, then, offer a variety of support services in various configurations and venues - both in person and online, as needs, preferences, and logistics dictate?

Problem Statement

This study sought to determine whether a telementoring program had an effect on beginning teacher efficacy. The following questions and hypotheses were answered:

1. What is the effect of a telementoring program on beginning teacher self-efficacy?

Hypothesis: Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy compared to beginning teachers who do not participate.

2. What is the effect of a telementoring program on beginning teacher self-efficacy in the areas of student engagement, instructional practices, and classroom management?

Hypotheses: (1) Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the area of student engagement compared to teachers who do not participate. (2) Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the area of instructional practices compared to beginning teachers who do not participate. (3) Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the area of classroom management compared to beginning teachers who do not participate.

3. What themes or patterns surfaced in the discussion board postings and are they consistent with the established framework of beginning teacher concerns cited in current literature?

Hypothesis: Discussion board postings in this study will substantiate the established framework of beginning teacher concerns cited in current literature.

Professional Significance of the Study

This study examined the effect of a telementoring program on beginning teacher efficacy. It was hoped that this quasi-experimental study will make a contribution to the knowledge of alternative methods for establishment of induction/mentoring programs for beginning teachers. My intent was to extend existing knowledge about beginning teachers' self-efficacy and telementoring. Although much has been written on the subject of induction and mentoring, data gathered on beginning teacher's use of

telementoring provided a greater depth of knowledge in this area.

Delimitations of the Study

A delimitation of the study was that the unit of analysis was confined to first-year teachers working in a school district in north central Texas. The population to which generalizations can be safely made is first-year teachers working in a school district of similar size and demographics. A second delimitation of the study was induction/mentoring programs could vary dramatically between districts. Findings were limited to programs that include telementoring as a supplement to a face-to-face mentoring program. A third delimitation of the study was the experimental and control groups were composed of predominantly female Caucasian teachers chosen through convenience sampling.

Limitations of the Study

A limitation of the study was that participants were not matched pairs. Both experimental and control groups were composed of elementary and secondary first-year teachers and their assigned mentors. With input from the campus principals, directors of the district induction program determined all mentor/mentee pairings. In addition to teaching across grade levels, study participants represented a wide variety of subject areas. Another limitation to the quasi-experimental design was the possibility of the Hawthorne effect. Knowing that they were receiving a treatment, the experimental group may have improved their sense of self-efficacy and performance-based outcomes being measured. The small sample and the time frame were also limitations of the study.

Other potentially relevant variables such as organizational climate, teachers' involvement in decision-making, parent/society involvement in the school activities, and

collective efficacy were not studied and further limited the study. A final limitation involved the survey instrument itself. First-year teachers' growth in self-efficacy was measured by the constructs in the teachers' sense of efficacy scale (TSES, 2001) designed by Tschannen-Moran and Woolfolk-Hoy.

Definition of Terms

The following definitions were used in this study:

1. Beginning Teacher: usually a brand new or novice teacher with no previous paid experience and who has had little opportunity for full responsibility for his/her own classroom.
2. Induction: the process of entering a new profession. In teaching, this often includes orientation, mentoring, coaching, support activities, staff development and observation of models of effective teaching.
3. Leavers: those who leave teaching altogether.
4. Mastery experiences: one's personal experiences with success or failure and the most powerful source of efficacy information. Successful performance tends to raise self-efficacy, and failures tend to lower it.
5. Mentee: the beginning teacher, usually first or second year teacher, who is being guided by the mentor.
6. Mentoring program: a formal program that provides support to the new teacher to counsel, guide, tutor, or coach.
7. Movers: those who migrate to the schools or districts.
8. Novice: a person new to a particular occupation, activity, etc.
9. Physiological states: the level of physiological or emotional arousal

(either anxiety or excitement) serves as an indicator of mastery or incapability; these in turn affect performance.

10. Protégé: a person guided and helped, especially in the furtherance of his or her career.
11. Settled stayers: those who continue to teach in the same school from one year to the next.
12. Social cognitive theory: defines human behavior as a triadic, dynamic, and reciprocal interaction of personal factors, behavior, and the environment (Bandura, 1986; 1993). According to this theory, an individual's behavior is uniquely determined by each of these three factors.
13. Teacher attrition: the phenomenon of teachers leaving the profession (Ingersoll, 2001, p. 503).
14. Teacher retention: the ability of school districts to maintain a stable teacher workforce as a result of teachers choosing to continue in their teaching positions.
15. Turnover: the departure of teachers from their teaching jobs in schools. These individuals could be leaving teaching for good or they may be moving across the district to another school (Ingersoll, 2001).
16. Teacher's sense of efficacy: "teachers' beliefs or conviction that they can influence how well students learn, even those who may be considered difficult or unmotivated" (Guskey & Passaro, 1994, p. 628).
17. Verbal persuasions: are manifested through specific performance

feedback. The potency of persuasion depends on the trustworthiness, credibility and expertise of the individual providing the information.

18. Veteran: a teacher who completes the first few years of teaching and remains in a classroom for more than three years.
19. Vicarious experiences: are accomplishments that are modeled by someone else.

Summary

The challenges associated with the first years of teaching frequently cause novice teachers to perform poorly and leave the profession in pursuit of other careers. Research confirms that support provided by induction/mentoring programs increases the retention rate of novice teachers and leads to an increase in self-efficacy of both beginning teachers and mentors. Telementoring and its effect on beginning teacher self-efficacy were investigated in this study. Chapter 1 provided the reader with background information, the problem statement, research questions and hypotheses guiding the study, delimitations and limitations of the study, and special definitions.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The purpose of this review of literature was to examine the effect that telementoring has on beginning teachers' self-efficacy. While conducting a comprehensive review of literature, it became evident that very little research was available in this area. As technology is increasingly integrated into schools and the use of telecommunications such as e-mail, wireless instant messages, and synchronous and asynchronous discussions becomes the norm rather than the exception, telementoring seems to be a logical choice for providing support to novice teachers.

In the absence of a seminal study regarding telementoring, descriptive information gleaned from articles written by leaders in the field such as Judith B. Harris and Lynda Abbott are included in this review. As many of the attributes and characteristics associated with traditional face-to-face mentoring are also applicable to telementoring, a broad perspective was taken when conducting research for this chapter.

The landmark study by Richard Ingersoll (2001) entitled, *"Teacher Turnover, Teacher Shortages, and the Organization of Schools,"* provides background information and rationale for the development and implementation of induction/mentoring programs. The literature review discusses the challenges faced by beginning teachers, outlines the benefits and tribulations of induction and mentoring programs, and reports the impact of induction and mentoring programs on beginning teacher attrition and retention. The theoretical framework for this study was based on Bandura's (1977) social cognitive learning theory. This chapter provides an overview of the construct of self-efficacy,

which was first introduced by Bandura in 1977 with the seminal publication of “*Self-efficacy: Toward a Unifying Theory of Behavioral Change*.” Current research conducted by Tschannen-Moran and Woolfolk Hoy concerning beginning teachers’ self-efficacy is reported in this review and provides the reader with emergent information regarding self-efficacy concepts. The topics and studies incorporated in this chapter were intended to both draw together information on the issues and to identify areas that warrant further investigation.

Historical Perspective

The United States Department of Education estimates that approximately 2.2 million teachers will be needed by the end of this decade, which is an average of more than 200,000 new teachers annually. The causes of the shortages in teacher supply are myriad, ranging from increasing student enrollments to the retirement of baby boomers. In addition, the requirement imposed by *No Child Left Behind* that a *highly qualified teacher* staffs every classroom has increased the problem (Hutchison & Jazzar, 2007; National Association of State Board of Education (NASBE), 1998).

In the last several years, states have adopted a wide range of initiatives in an effort to recruit new candidates into teaching. Programs such as troops-to-teachers and teach for America have sought to tap new pools of talent. A variety of incentives, such as signing bonuses, student loan forgiveness, housing assistance, and tuition reimbursement have also been offered in the hope of attracting talented people to the profession. Yet despite these efforts, the need for additional teachers, especially in large urban school districts, has continued to grow (Hutchison & Jazzar, 2007; NASBE, 1998).

Although the potential effects of a teacher shortage have generated much needed attention, critical aspects of this problem remain unexamined, namely what areas are most affected by the shortage, the cause of the shortages, and strategies to combat teacher shortages in high-need areas. The shortage problem may better be understood as a problem of teacher attraction, distribution, and retention (Morrow, 1999).

For the most part, the *shortages* that exist are shortages of people willing to work at the salaries and under the working conditions offered in specific locations.

Morrow (1999), public broadcasting series commentator on education, argues:

Although some regions of the country are having difficulty finding teachers, and shortages exist in a few fields (science, math, and special education), we now produce more teachers than we need, at least 30,000 a year by some estimates. Where shortages exist, these are often what should be labeled *self-inflicted wounds*. They fall into three categories: (1) schools underpay and mistreat new teachers and eventually drive them from the profession; (2) inept school districts cannot find the qualified teachers living under their noses; and, (3) substandard training ill prepares young men and women for the realities of classroom life. (p. 64)

The National Commission on Teaching and America's Future (NCTAF) (2002) states, "there appear to be shortfalls in some states and districts, there are often surpluses in others, even when they are in close proximity to each other" (p. 29). Increasing concern about teacher quality and the projected teacher shortage provides the impetus for empirical research on teacher supply and demand. Over the past two decades, a substantial body of empirical analysis has focused on teacher turnover – the departure of teachers from their teaching jobs. In particular, the needs of beginning teachers are at the forefront of state and national policy.

A report by the NCTAF (2002) describes a surplus of teachers in most fields in

the northwest, Rocky Mountains, northeast, and most Middle Atlantic States, while there are shortages of teachers in many fields in Alaska, the west, and the south. In general, states that offer higher salaries in conjunction with policies that are more supportive of education and teaching do not experience sweeping teacher shortages. Likewise, within states, most wealthy districts have surpluses of teachers while poorer districts that offer lower salaries and less attractive working conditions have difficulty hiring and retaining teachers (NCTAF, 2002).

Pan and Mutchler (2000) convey that as long ago as 1988, researchers at the national level proclaimed the urgency of problems in the teacher pipeline. A decade later, teacher supply and quality remains a serious problem, with schools experiencing continuing high rates of attrition for beginning teachers; According to NCTAF (1997), “more than 30% leave the profession within the first five years of teaching” (p. 21).

Ingersoll (2001) declares, “Perhaps the best way to discover why employees depart from jobs is to ask them” (p. 32). Over the past decade, Ingersoll and Smith (2003) carried out a series of research projects on teacher supply, demand, quality, and shortages using data from the nationally representative schools and staffing survey (SASS) and its supplement, teacher follow-up survey (TFS), conducted by the NCES, 2002). The teacher follow-up survey was administered to a national sample of United States (U.S.) teachers who left their teaching jobs after their first year. Among other queries on the questionnaire, teachers were to list the main reasons (up to three) for their departure. The following data reflect the results of the study (Ingersoll & Smith, 2003):

- About 19% of the beginners who left teaching indicated that they did so

as a result of a school staffing action, such as a cutback, layoff, termination, school reorganization, or school closing;

- Another 42% cited personal reasons, including pregnancy, child rearing, health problems, and family moves;
- Approximately 39% said that they left to pursue a better job or another career; and
- Approximately 29% said that dissatisfaction with teaching as a career or with their specific job was a main reason.

Results of the teacher follow-up survey revealed that pursuit of another job combined with job dissatisfaction plays a major role in about two-thirds of all beginning teachers' decision to leave the profession. The 29%, who listed job dissatisfaction as a major reason for leaving, completed another questionnaire about the source of their dissatisfaction. Again, they had the option of listing up to three reasons for their dissatisfaction.

More than three-fourths linked their quitting to low salaries. But, even more of them indicated that one of four different school working conditions was behind their decision to quit: (1) student discipline problems, (2) lack of support from the school administration, (3) poor student motivation, and (4) lack of teacher influence over school wide and classroom decision making (Ingersoll, 2001). Beginning teachers abandon the classroom at high rates as a consequence of difficulties that they experience as new comers (Abbott, 2003).

Based on the analysis of data for the 1999-2000 school year, the National Center for Educational Statistics (NCES) (2000) reports that turnover for teachers was

significantly higher than for other occupations. According to Ingersoll (2001), turnover rates of all United States (U.S.) employees in the 1990s hovered around 11%, whereas turnover rates in teaching during the late 1980s and early-to-mid 1990s was between 12.4 % and 13.5 %. Migration, or transfer of teachers from one school to another, accounts for at least half of the annual turnover rates.

Of every 100 new graduates with licenses to teach, 30 do not seek a teaching position and of the remaining 70, at least 21 will leave teaching within five years (Merrow, 1999). It is estimated that almost a third of America's teachers leave the field sometime during their first three years of teaching, and almost half leave after five years. In many low-income communities and rural areas, the rates of attrition are even higher. The attrition rate for those who enter through some *alternative* pathways can be as high as 60%. It is important to recognize that the teacher retention problem crosses all communities, all sectors of education, and to a greater or lesser extent, every state (NCTAF, 2002).

The teacher retention problem is evident, to a greater or lesser extent, in every state, but Texas is one of the more dramatic cases (NCTAF, 2002). Of the over 63,000 teaching positions in the state that needed to be filled in the 1998-1999 school year, most of the openings (about 46,600 or 74%) were due to teachers leaving the profession prior to retirement. In comparison, 11,000 (17%) of these vacancies resulted from teacher retirements, and approximately 5,700 (9%) of these positions were created to accommodate increasing student enrollment. Crucially, many of the teachers who left the profession had not been teaching for very long. Between 1993 and 1996 as many as 19% of the states new teachers left the profession after their first year (NCTAF,

2002).

Veenman (1984), in the classic international study of beginning teachers notes, remarkable consistency of perceived problems among novice teachers. Uniformity is evident across time and differently structured education systems. Rookie teachers in Veenman's study named classroom management, student motivation, individual student differences, assessment, and parent relations to be some of the greatest challenges as cited in (Stansbury & Zimmerman, 2002). Through interviews and surveys, Jonson (2002) compiled a similar list of challenges facing first-year teachers. They consist of:

1. Classroom management and discipline
2. Time management
3. An overwhelming workload
4. Classroom instruction
5. Technology in the classroom
6. High-stakes accountability
7. Socio-cultural awareness and sensitivity
8. Student motivation
9. A solitary work environment
10. Relationships with parents and colleagues

All of the factors mentioned have a negative impact on teacher retention. A message relayed in the recent report, *No Dreams Denied: a Pledge to America's Children* (NCTAF, 2003), is that quality teaching for all children is impossible if we are unable to retain teachers. Furthermore, the report indicates that teacher retention is at a national crisis level.

Why Retention Matters

According to the 2002 report by the National Commission on Teaching (NCTAF) and America's Future, during the 1999-2000 school year, schools hired 534,861 teachers, but they lost as many as they hired. By the end of the school year, 539,778 had left their classrooms. Almost a third of the teachers during that year were in transition. They were either going through the process of entering a new school with new colleagues and students, or they were at various stages of leaving their schools.

Staff turnover keeps school administrators scrambling to find replacements, and in too many cases quality teaching is compromised in an effort to find a sufficient number of warm bodies to staff classrooms. In the wake of this turmoil, the most serious consequence, of course, is that high turnover diminishes teaching quality and student achievement (NCTAF, 2002). Teacher turnover is also expensive. Expenditures associated with teacher turnover levies at least three different types of cost, which include (1) organizational costs, (2) financial costs, and (3) instructional costs (Johnson, Berg, & Donaldson, 2005).

Districts have come to the realization that retention of qualified teachers may be costly, but less so than the constant recruitment and training of new personnel. The fiscal effect on education systems of teachers leaving the profession amounts to approximately 20% of each existing teacher's salary with hiring and training costs considered. However, true turnover costs are more complex than simply figuring out the average cost of replacement. Unwanted turnover represents costs that are greater than simple replacement costs (Hayes, 2006).

Heider (2005), reports that the average cost to recruit, hire, prepare and lose a

teacher is approximately \$50,000. This adds up to a lot of money that could be spent on students and programs designed to raise teacher job satisfaction. With so many qualified teachers leaving the profession, students are experiencing a substandard education in a considerable number of school districts (Carroll & Fulton, 2004).

Chase (2000), president of the national education association (NEA), the largest teachers' union, which boasts a membership of more than 2.6 million, writes, "NEA members know that high teacher turnover has devastating consequences for children. Research shows that the single most important factor in a child's education is the quality of his or her teacher, and quality depends in large measure upon years of experience" (p. 5).

The importance of teacher quality was further proven in the 1997 Tennessee value-added assessment system (TVAAS) study (Sanders & Horn, 1998). Researchers examined the relative magnitude of teacher effects on student achievement while simultaneously considering the influences of intra-classroom heterogeneity, student achievement level, and class size on academic growth. Statistical mixed-model methodologies were used to conduct multivariate, longitudinal analyses of student achievement.

The findings indicated that teacher effects are dominant factors affecting student academic gain and that the classroom context variables of heterogeneity among students and class size have relatively little influence on academic gain. Thus, a major conclusion of this study is that teachers make a significant difference on student achievement (Sanders & Horn, 1998).

In response to these and similar findings that extol teachers' impact on student

achievement, induction programs have been increasingly established to assist novice elementary and secondary teachers in coping with the practicalities of teaching, or managing groups of students, and of adjusting to the school environment (Smith & Ingersoll, 2004).

Induction and Mentoring Programs

The idea of a mentor is certainly nothing new. The term *mentor* itself dates back to the eighth or ninth century B.C., specifically to Homer's *Odyssey*. In his epic poem, Homer describes his hero, Odysseus, as Odysseus prepares to set out on a 10-year voyage. Odysseus must leave behind his son, Telemachus, and asks his trusted friend and mentor to guide and counsel Telemachus in his absence. While the father is gone, the mentor serves as a sage advisor to the younger man, helping him to grow intellectually, emotionally, and socially. From this ancient literary figure, mentor has come to refer to a wise and faithful counselor who helps to guide a protégé through a developmental process. This could be the transition from youth to adulthood, as in the case of Telemachus, or from student to professional, as with a first-year teacher (Jonson, 2002).

A great deal of research literature documents the extent to which beginning teachers struggle throughout their early classroom years (Ingersoll, 2001; Intrator, 2006; Jonson, 2002; Merrow, 1999; Scherer, 1999 & Scherer, 2003). Many veteran teachers have vivid memories of their teaching experiences, some of them intensely emotional. The often-voiced contention that the first year is one of trauma, drama, and basic survival may be overstated, but all beginning teachers do have special needs, problems, and concerns. As Jonson (2002) so simply states, "every beginning teacher needs a

critical friend” (p. 24).

To understand the role of the mentor in education, it is helpful for mentors to think back to some of their own first-year teaching experiences and the anxieties they felt. The fears that are common to many beginning teachers are expressed in the following quote from Leila Christenbury (1995):

As a newly hired teacher, I recall being shown to my classroom just prior to the beginning of school. There were four blank walls, some boxes of crayons, rulers, paper, and a few textbooks in the room. After unlocking the door; the smiling secretary waved good-bye and wished me good luck! A thick lump formed at the back of my throat and started spreading downward. I was totally alone and although I was trained in a fine university program, the enormity of organizing the bits and pieces into a learning environment eluded me. The thought of being responsible for thirty small children for the next nine months nearly panicked me. (p. 3)

Historically, the teaching occupation lacks the kind of structured induction and initiation processes common to many white-collar occupations and characteristic of the traditional professions. Unlike many other professions, the education environment typically places the novice teacher in a performance-based arena working in isolation from other professional practitioners (Hayes, 2006; Lortie, 1975).

Some extraordinary individuals surmount the obstacles of novice teaching. However, many novice teachers flounder, alone and frustrated, receiving elaborate performance critiques from a variety of audiences (school administrators, department reviewers, peer teachers, students, parents, and general public) and minimal support in actual performance improvement from their education colleagues. Without the aid of an effective mentoring program, many of those starry-eyed, capable novice teachers become disillusioned and exit the profession within their first three years of teaching (Hayes, 2006).

This awareness has led to an increase in mentoring and induction programs, over the past two decades, as support for new teachers has become the norm in many states (Fideler & Haselkorn, 1999). The 1980s and 1990s generated a growing number of teacher induction programs aimed at helping beginning teachers make a successful transition from their teacher preparation experience to being the teacher-of-record in a classroom (Stansbury & Zimmerman, 2002). Among the common goals of such programs are:

- Improving teaching performance;
- Increasing the retention of promising beginning teachers;
- Promoting the personal and professional well being of beginning teachers;
- Satisfying mandated requirements for induction and/or licensure; and
- Transmitting the culture of the system to beginning teachers (Huling-Austin, 1990; Ingersoll & Kralik, 2004).

Well designed and supported mentoring programs produce the desired effects in teacher effectiveness and retention. Although, the potential benefits of beginning teacher support generally include: lower teacher attrition, higher teacher morale, and most importantly, improved teaching and learning, the implementation of mentoring programs varies from state to state and district to district (Stansbury & Zimmerman, 2002).

Researchers Fulton, Yoon, & Lee (2005) reported In the national commission on teaching and America's future that despite their responsibility for the certification of new teachers, only a third of the states in the U. S. have policies that require, guide, and finance any kind of new teacher induction program. State support varies widely because

induction is typically viewed as a district or school responsibility. Districts seek ways to meet this responsibility, and induction programs have become far more common in the U. S. in recent years (NCTAF, 2005).

The percentage of beginning public school teachers participating in some form of induction program during the ten-year period from 1990 to 2000 rose from 51% to 83%. Over the same ten-year period, growth in the private sector was even more dramatic, as participation in induction activities by private school teachers increased from 25% to 60% (NCTAF, 2005).

Studies on induction programs across the country are providing information on the effect of induction programs on beginning teacher attrition. Comprehensive, coherent, and sustained induction programs are common factors found in districts with low attrition rates. The following are a few examples.

- The career in teaching plan in Rochester, New York, established an induction/mentoring program for beginning teachers and increased the number of first-year teachers who returned for a second year from 69% in 1987 to 86% in 1999 (Kelly, 2001). The addition of a new-teacher program at Leyden High School in Franklin Park, Illinois, resulted in a first-year teacher retention rate of 85-95% (Martin & Robbins, 1999);
- Lafourche Parish, in Louisiana, reduced its teacher attrition rate from 51% to 15% almost immediately after introducing a new-teacher induction program in 1996. By 2002, the attrition rate in Lafourche Parish dropped to 7%. The Lafourche Parish induction program is so successful that Louisiana has adopted it as the statewide model for all school districts

(Wong, 2004);

- High performance in teaching and learning is the San Diego unified school district's professional development program. A central aspect of this district's model is *job-embedded learning*. One example of this technique is a teacher-mentoring program, which provides new teachers with assistance from both a mentor teacher and a university coach (Heller, 2004); and
- Newport-Mesa school district in California lost five teachers out of 148 hired during the 2001-2002 school year (Wong, 2004).

Mentors are an important, perhaps the most important, component of an induction program, but they must be part of an induction process aligned to the district's vision, mission, and structure. For a mentor to be effective, he or she must be trained in the mission and goals of the district. For instance, Prince George's county in Maryland provides 40 hours of training for each mentor. Forsyth County in Georgia provides 100 hours of training for their mentors (Wong, 2004).

Each new teacher in Hopewell, Virginia has access to a variety of support. They have a personal mentor to go to for immediate, simple help with procedural questions; four coaches with expertise in classroom management and instructional skills, who have been trained and are compensated on each campus; and five lead teachers with knowledge and skills in core subjects and technology, who are also trained and compensated. In addition, the new teachers receive assistance from staff developers and administrators from both the central office and the building sites (Wong, 2004).

Providing beginning teacher support through mentoring can be looked at as a

continuum. At the start of the year, the mentor provides personal and emotional support to the novice teacher. As the year progresses, the role of the mentor expands to include specific tasks or problem-related support. Ideally, by the end of the year, the mentor's responsibility expands one step further to help the newcomer develop a capacity for critical self-reflection on teaching. The mentor's final challenge is to assist beginning teachers in activities that encourage them to be reflective practitioners, decision makers, problem solvers, and researchers (Stansbury & Zimmerman, 2002; Yost, 2002).

Mentors should suspect that a new teacher's early tries will not come close to reaching standards. With this in mind, Joyce and Showers (1982) point out that a major job of mentors is to help their mentees feel good about themselves during these early trials. Beginning teacher self-efficacy stems from self-assessment of teaching skills and changes over time with influences from new information and task experiences. In the early years, personal efficacy is achieved in the course of professional development: learning about subject matter, pedagogy, students, and self (Costa & Garmston, 2002).

Beginning Teacher Self-Efficacy

Self-efficacy and self-esteem are alike in that they are each self-conceptions critical to effective functioning. In other ways, self-efficacy beliefs differ markedly from self-esteem beliefs. Self-efficacy is a judgment of one's own confidence; self-esteem is a judgment of self-value. Self-efficacy beliefs revolve around questions of *can* (Can I write well? Can I drive a car? Can I solve this problem?), whereas self-esteem beliefs reflect questions of *being* and *feeling* (Who am I? Do I like myself? How do I feel about myself as a writer?). It is important to note that self-efficacy and self-esteem need not

be related and that there is not a fixed relationship between one's beliefs about what one can or cannot do and whether one feels positively or negatively about oneself (Morris, 2004).

In 2001, a University of North Texas professor, Robin K. Henson, delivered a keynote address entitled, *Teacher Self-Efficacy: Substantive Implications and Measurement Dilemmas*, at the annual meeting of the educational research exchange at Texas A & M University at College Station. Henson (2001) began the address as follows:

Anecdotally, we have observed others prevailing amidst adversity and trial. Consider, for example, the following:

Louis Pasteur was only a mediocre pupil in undergraduate studies and ranked 15th out of 22 students in chemistry; Albert Einstein was four before he began to speak. He did not read until he was seven. His teacher described him as *mentally slow, unsociable, and adrift forever in foolish dreams*; and It has been told that a football expert once made the following comments about Vince Lombardi: *He possesses minimal football knowledge and lacks motivation*. Of course, each of us could add our own testimony of how we have fared in the world, for better or worse. Implicit in these and our own anecdotes is the question of how people are able to face challenge, direct their actions, and somehow succeed. One answer to this question lies with the concept of *self-efficacy* (p. 1).

The construct of self-efficacy has a relatively brief history that began with Bandura's (1977) publication of *Self-Efficacy: toward a Unifying Theory of Behavioral Change*. A decade later, Bandura (1986) situated the construct within a social cognitive theory of human behavior that embedded cognitive development within a socio-structural network of influences. The tenets of self-efficacy have since been tested in varied disciplines and settings and have received support from a growing body of findings from diverse fields (Pajares, 1996).

In the 1997 text, *Self-efficacy: The Exercise of Control*, Bandura offers an

exhaustive study of two decades of self-efficacy research. He underscores the pervasive influence of self-efficacy in one's daily life and achievements and its application in diverse fields such as business, health, education, and international affairs. Bandura's research advances the idea that self-efficacy is formed from a triadic model of *reciprocal causation* where human or personal agency, i.e., the will and self-assurance to take action, works reciprocally. The three components of the model are behavior, the external environment, and internal personal factors (e.g. cognitive, affective, and biological events) as cited in (Morris, 2004).

According to Bandura's (1977) social cognitive theory, individuals possess a self-system that enables them to exercise a measure of control over their thoughts, feelings, motivation, and actions. This self-system provides reference mechanisms and a set of sub-functions for perceiving, regulating, and evaluating behavior, which results from the interplay between the system and environmental sources of influences. As such, it serves a self-regulatory function by providing individuals with the capability to influence their own cognitive processes and actions and thus alter their environments.

The self-beliefs that individuals use to exercise a measure of control over their environments include self-efficacy beliefs. Bandura (1997) stated, "Belief in one's capability to organize and execute the course of action is required to manage prospective situations" (p. 2). Put more simply, Pajares (1997) described self-efficacy as the confidence that one has in his or her own abilities.

Self-efficacy beliefs are developed from four primary sources. Their order of influence is as follows: (1) mastery experiences, (2) vicarious experiences, (3) verbal and social persuasions, and (4) physiological states (Bandura, 1977).

Some of the most powerful influences on development of teacher self-efficacy are mastery experiences during student teaching and the induction year. The perception that a successful performance raises efficacy beliefs contributes to the expectation that performance will be proficient in the future. The perception that one's performance is a failure lowers self-efficacy beliefs, contributing to the expectation that future performances will also be inept, unless the failure is viewed as providing clues about more potentially successful strategies (Bandura, 1997; Morris, 2004; Tschannen-Moran, Woolfolk Hoy & Hoy, 1998).

Attribution plays a role in mastery experiences as well. If success is attributed to internal or controllable causes such as ability or effort, then self-efficacy is enhanced. If success is attributed to luck or the intervention of others, however, then self-efficacy may not be strengthened (Bandura, 1993; Pintrich & Schunk, 1996). The level of arousal, either of anxiety or excitement, adds to the feeling of mastery or incompetence, depending on how the arousal is interpreted. For example, feelings of tension can be interpreted as anxiety and fear that failure is eminent or as excitement such as being *psyched* for a good class (Spero & Woolfolk Hoy, 2005).

Stansbury and Zimmerman (2002) suggested that if teachers are to become skilled at independently identifying and addressing the idiosyncratic learning problems of their students, they must learn to reflect critically on student work, as well as on their own teaching practices. For beginners who have not developed the habit of reflecting on their own teaching, the veteran may model the process of identifying a problem and proposing and analyzing for the beginner a variety of solutions.

Through modeling problem identification and analysis, and problem solving

behaviors, the veteran can help the beginner think in terms of being guided by evidence; for example, how will you know that your students have learned what you are trying to teach? Then as the novice begins to develop more self-confidence and self-efficacy, the veteran may continue to propose solutions, but prompt the beginning teacher to analyze the problem. Over time, the veteran reduces the amount of guidance offered and engages more as an interested and sympathetic colleague shifting from a directive to a collaborative and finally to a facilitative role (Stansbury & Zimmerman, 2002).

The second avenue for developing self-efficacy beliefs is vicarious experiences, those in which someone else models the skill in question. The degree to which the observer identifies with the model moderates the efficacy effect on the observer. The more closely the observer identifies with the model, the stronger the impact on efficacy. When a model with whom the observer identifies performs well in specific contexts, the efficacy of the observer is enhanced. When the model performs poorly, the efficacy expectations of the observer decrease. If, on the other hand, observers judge their capability as superior to the model's capability, failure of the model does not have a negative effect (Bandura, 1977; Pajares, 1997; Woolfolk Hoy, 2005). Bandura (1997) writes:

Learning would be exceedingly laborious, not to mention hazardous, if people had to rely solely on the effects of their own actions to inform them what to do. Fortunately, most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action. (p. 2)

Modeled behavior with clear outcomes conveys more efficacious information than if the effects of the modeled actions remain ambiguous. In investigations of

vicarious processes, observing one perform activities that meet with success does indeed, produce greater behavioral improvements than witnessing the same performances modeled without any evident consequences (Bandura, 1977).

Bandura (1977) discovered that modeling through exposure to multiple skilled models (diversified modeling) is superior to single modeling producing stronger self-efficacy beliefs. The rationale is that if people of widely differing characteristics can succeed, then observers have a reasonable basis for increasing their own sense of self-efficacy.

Third in order of influence is verbal persuasion, which is widely used in attempts to influence human behavior because of its ease and ready availability. People are led, through suggestion, into believing they can cope successfully with what has overwhelmed them in the past. Efficacy expectations induced in this manner are likely to be weaker than those arising from one's own accomplishments because an authentic experiential base is not provided for them (Bandura, 1977).

Social persuasion, though limited in its impact, may provide an *efficacy boost* to counter occasional setbacks that might instill enough self-doubt to interrupt persistence (Bandura, 1977). Praise or negative comments may also affect self-efficacy, although it is suggested that it is easier to weaken self-efficacy through negative appraisals than to bolster it through positive appraisals (Morris, 2004).

Verbal messages and social persuasions may entail a *pep talk* or specific performance feedback from a supervisor, colleague, or student (Heppner, 1994). It may also involve general chatter in the teachers' lounge or messages in the media about the ability of teachers to influence students. The potency of persuasion depends on the

credibility, trustworthiness, and expertise of the persuader (Bandura, 1986).

Hoy (2000) found that a powerful source of social influence for new teachers is the school setting itself. Student feedback in the form of enthusiasm and engagement and verbal persuasion from experienced teachers encouragement and advice are both strong sources of self-efficacy for beginning teachers (Mulholland & Wallace, 2001).

Results of several lines of research attest to the limitation of procedures that attempt to instill outcome expectations in people simply by telling them what to expect. In laboratory studies, *placebo* conditions designed suggestively to raise expectations of improvement produces little change in refractory behavior. Whether this is due to the low credibility of the suggestions or to the weakness of the induced expectations cannot be determined from these studies, because the expectations were not measured (Bandura, 1977).

Fourth, physiological states such as anxiety, stress, arousal, fatigue, and mood states provide information about self-efficacy beliefs. Because individuals have the capability to alter their own thinking, self-efficacy beliefs, in turn, also powerfully influence the physiological states (Pajares, 1997). People live with psychic environments that are primarily of their own making. It is often said that people can *read* themselves, and so this reading comes to be a realization of the thoughts and emotional states that individuals have themselves created. Often they can gauge their confidence by the emotional state they experience as they contemplate an action (Bandura, 1977).

Overall, when people experience aversive thoughts and fears about their capabilities, those negative affective reactions can themselves further lower perceptions of capability and trigger the stress and agitation that help ensure the inadequate

performance they fear. This is not to say that the typical anxiety experienced before an important endeavor is a guide to low self-efficacy. However, strong emotional reactions to a task provide cues about the anticipated success or failure of the outcome.

A teachers sense of self-efficacy is a judgment of one's capability to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated (Bandura, 1977; Capa, 2005; Tschannen-Moran & Hoy, 2000). Self-efficacy is one of the few teacher characteristics related to student achievement.

Capa (2005) notes that for over two decades researchers have been interested in the origins, measures, and factors cultivating the formation of self-efficacy. Teacher self-efficacy has been associated with commitment to teaching, teachers' persistence in the teaching field, and teacher burnout. In addition to self-efficacy being especially prominent in studies of constructs, such as academic achievement, it is equally important in research concerning attributions of success and failure, goal setting, social comparisons, memory, problem solving, career development, and teaching and teacher education (Madewell & Shaughnessy, 2003).

Rosenholtz (1989) selected a random sample of teachers in five rural and three urban/suburban school districts in Tennessee for a study on school as a workplace. Study data included reading and math achievement test scores for a second through fourth grade cohort group over a period of three years.

Although the purpose of the study was to account for differences in student achievement among elementary schools, notable insight concerning teachers' self-efficacy was discovered. Teacher self-efficacy is a simple idea with significant

implications, as noted in the following statements drawn from the study (Tschannen-Moran & Woolfolk Hoy, 2001).

- Social organization of the school has a profound impact on teachers, teaching and student achievement;
- Teachers' sense of self-efficacy influences students' basic skills and mastery;
- The more certainty teachers express about themselves and the school culture, the more students learn. Teacher certainty (personal efficacy) is bolstered by providing teachers with positive feedback, encouragement, and nurturing inspiration to persist in their instructional efforts, along with adequate resources; and
- Teachers' prefer workplaces that enable them to feel professionally empowered and self-fulfilled, and keeps them reaching for new challenges, opportunities, and technical knowledge.

Research conducted by Judith Hayes (2006) focuses on the Raytheon teaching fellows program established by Wichita State University in partnership with the Raytheon Aircraft Corporation. Hayes, serving as director of Wichita State University's transition to teaching and as director of the Raytheon teaching fellows program, lists program goals: (1) to encourage more talented people to enter the field of education, and (2) to obtain the content knowledge and learning strategies necessary for beginning teachers to become effective educators in the areas of mathematics and science.

Participation in the study was competitive and participants were identified through a rigorous selection process. Applicants were required to provide three

essays, copies of transcripts, three letters of recommendation, and an interview with a selection committee. New candidates were accepted each year of the program following this same process. Principals and science/mathematics department chairs from local school districts received letters briefly outlining the program and asking for mentor nominations. A select group of mentors attended an informational meeting and then a mandatory mentor training workshop prior to assuming their mentoring responsibilities (Hayes, 2006).

An essential element of the program, the mentoring component, occurred over a three-year period. The study examined novice teachers' performance, feelings of self-efficacy, and rates of retention. The mentoring component began with the undergraduate pre-service education students and continued through their first three years in the teaching profession (Hayes, 2006).

For this study, Hayes (2006) defined self-efficacy as one's belief in his or her ability to organize and manage behaviors necessary to produce specific performance. Research instruments included the teacher needs assessment questionnaire, the mentor interactions log, and the focus group sessions. All research instruments yielded data to support that novice teachers participating as part of a mentor triad indicated enhanced feelings of self-efficacy in their teaching abilities.

In 1999, Birkeland and Johnson (2002) interviewed a diverse group of 50 first- and second-year teachers in a wide range of Massachusetts public schools, asking them how they experienced their work and how they conceived of careers in teaching. In summer 2001, they interviewed these teachers again seeking to learn whether they had decided to stay in their schools, move to new schools, or leave public school

teaching, and why they had made the choices they did.

While some respondents had left teaching, changed schools, or were displeased with teaching or their current schools, there were 13 teachers, whom they called, *settled stayers* who indicated that they were satisfied with teaching and happy in their schools. They explained why in responses to interview questions, which were both heartening and instructive (Birkeland & Johnson, 2002).

When Birkeland and Johnson (2002) posed the question, “What would it take to keep you in teaching?” one *settled stayer* answered, “I’ll need a sense of success, not unqualified constant success, because I know that’s completely unrealistic. But, overall, that I am making a difference for kids and that they’re learning from me” (p.19). Other beginning teachers echoed his response.

Central to these teachers’ satisfaction is the belief that they are teaching their students effectively. Achieving that *sense of success* depends largely on the conditions new teachers encounter at their schools: their roles on the faculty; relationships with colleagues; the availability of curricula and resources; and, the presence of supportive structures that focus the life of the school on teaching and learning.

Birkeland and Johnson’s (2002) interviews identified four keys to that sense of success expressed by settled stayers. Beginning teachers benefit from schools that:

- Offer new teachers novice status;
- Create a supportive professional culture;
- Provide curricular guidance and resources; and
- Create school-wide conditions that support student learning.

Madewell and Shaughnessy (2003) interviewed Frank Pajares who serves

as the Associate Editor of the *Journal of Educational Psychology*². When researchers asked Dr. Pajares, one of the leading scholars on the subject of self-efficacy, to describe the current main directions in self-efficacy research, he responded with the following statement:

In education we are past the point of showing that self-efficacy is related to, and predictive of, academic attainment. Studies that continue to make that point in varied academic domains are simply redundant. At this point we need to put into practice the policies, interventions, and schooling strategies that emanate from insights obtained from research findings. I would like to see self-efficacy research dedicate itself to this path. (p. 383)

In a paper presented at the annual meeting of the American Educational Research Association in 2002, Megan Tschannen-Moran and Anita Woolfolk Hoy described their exploration of self-efficacy beliefs as related to academic achievement. Findings indicate that teachers with a strong sense of self-efficacy are more open to new ideas and are more willing to experiment with new methods to better meet the needs of their students.

Furthermore, efficacious beliefs influence teachers' persistence when things do not go smoothly and their resilience in the face of setbacks. Greater efficacy also enables teachers to be less critical of students when they make errors, to work longer with a student who is struggling, and to be less inclined to refer a difficult student to special education (Tschannen-Moran & Woolfolk Hoy, 2002).

Attention to the factors that support the development of a strong sense of self-efficacy among pre-service and novice teachers seems to be worth what effort and care may be involved because, once established, efficacious beliefs of experienced teachers seem resistant to change. Evidence suggests that input during initial training

² © 2007 American Psychological Association

has a different impact than input received after teachers are in the field (Woolfolk Hoy, 2000).

Beginning teacher retention and effectiveness leading to student achievement are common goals associated with induction and mentoring programs. These goals are affected positively or negatively by factors that influence a teacher's sense of self-efficacy in the classroom and satisfaction on the job (Johnson, et al., 2005). In order to enhance communication, provide support, foster the learning community concept, and assist in developing the beginning teacher, telementoring may be added to a face-to-face mentoring program.

Mentoring in the Age of Technology

Every year 3.5 trillion e-mail messages are sent - many of them between employees of corporations. This year, daily e-mail correspondence is projected to reach 36 billion (Public Interest Registry, 2003). Big business has been very successful at building relationships through e-mail. According to the Public Interest Registry (2003), "Relationship-building is precisely what drove the expansion of the Internet" (p. 2). Individuals and small businesses increasingly are turning to telementoring, or online mentoring, using e-mail as the primary tool to connect with students, business apprentices, and young professionals. A form of the practice has been around since the late 1970s, and is seen as a way to find and hone new talent (Brown, 2006; Hunt, 2005).

Brown (2006) remarks that e-mentoring is growing and so is the demand for it. "People who could not otherwise mentor because of geography or time are able to serve as mentors through e-mentoring and help satisfy the demand; E-mentoring is also

being used by traditional mentoring programs, to provide another method of contact for those who are already in mentoring relationships” (p. 2).

Educators can learn from this success and use technology to build collegial relationships between new teachers through a process called telementoring, which is defined as a mentoring relationship or program in which the primary form of contact between mentor and mentee is made through the use of telecommunication media or computer-mediated communications (Eisenman & Thornton, 1999; Harris, 2006; O’Neill, 1996; Wighton, 1993).

Telementoring is an adaptation of mentoring, using telecommunication technology as the means to establish and maintain mentoring relationships between the participants. The communication methods that a telementoring program can adopt are broad in scope, including a single communication method or multiple, simultaneous methods including, but not limited to, e-mail, discussion boards, audio or video conferencing, and/or chat room. It can be a private medium or a public one. Consequently, the rich environment and the flexibility that telementoring generates are its most appealing benefits (Price & Chen, 2003; Riel, 2006).

One of the greatest benefits of telementoring is that it eliminates the limitations of time and place. Mentoring relationships can happen anywhere at any time in cyberspace. Participants can be proactively and reactively engaged at their own convenience without meeting face-to-face (Guy, 2000; Muller & Single, 1999; Price and Chen, 2003).

By using an electronic format without constraints of time or place, mentors and mentees can explore specific topics of interest and rather than physical proximity and personal schedules being criteria for assigning mentors, expertise is allowed to take

precedence (O'Neill & Harris, 2005). As an example, a beginning teacher interested in an effective method of cooperative learning might e-mail an inquiry to a university professor as to how the strategy is conceptualized and seek information from a mentor on how it really works in a classroom setting. Reciprocally, the beginning teacher can share experiential knowledge of how the strategy has or has not benefited her/his own learning (Guy, 2000).

Telementoring participants also profit from the unique communication qualities associated with electronic communications, which possess qualities that support the development of open, supportive relationships. Electronic communications result in the attenuation of status differences by concealing social cues that otherwise hinder communication between higher status groups and lower status groups. In addition, communicating using e-mail allows for the construction of thoughtfully written messages without the pressure of immediately responding, such as in communicating orally (Muller & Single, 1999).

Riel (2006) identifies three broad categories of telementoring: (1) pair mentoring, (2) group mentoring, and (3) *ask an expert model*. Pair mentoring involves a long-term relationship between a protégé and a mentor. In this model, the mentor provides not only information, but also social and psychological support for the protégé. Social development is considered as important as the acquisition of knowledge or skill. In this model, technological resources such as e-mail, audio, video, and other enhanced technologies are frequently used (Perez & Dorman, 2001; Riel, 2006).

Group mentoring entails matching an expert or group of experts with a protégé or a group of protégés. Group mentoring may involve a single interaction or a sustained

series of interactions over a longer period of time. Whatever the model employed, telementoring involves some kind of basic computer technology, including appropriate software such as chat rooms, bulletin boards, instant messaging, or e-mail (Perez & Dorman, 2001). Riel (2006) infers that telementor pair relationships are the most difficult to support, as matching strangers requires a great deal of work on all sides. However, when a good match is found the effects can be very powerful.

Matching an expert or experts with a group or a class of learners is often a more effective strategy. In these partnerships, there is room for different forms of contributions by all participants. The distributed expertise of the group becomes clear and everyone can be both a learner and a teacher (Riel, 2006). The *ask an expert* model is usually a single or short-term exchange where protégés or novices ask an expert for guidance and assistance. In some instances, novices post questions to mentors, who serve primarily as knowledgeable sources of support and guidance. Mentors post answers to electronic archives or bulletin boards for later reference or use. In this model, the protégé receives short-term advice, instruction, or guidance from the mentor. The central feature of this model is information sharing between mentor and protégé.

The, *ask an expert* formulation of mentoring alters the traditional concept of mentor, where an ongoing relationship is the central facet of the mentor-protégé dyad. The particular advantages of *ask an expert* is that students are linked with experts whom they otherwise would never meet. However, this model of mentoring does little to promote the socialization or acculturation of protégés that has been identified as so important to mentoring relationships (Heider, 2005; Perez & Dorman, 2001).

Riel (2006) suggests that *ask an expert* mentors who assist others in developing skills to find their own answers are often better than those giving information answers. Mentors who take this approach are not only providing factual answers, but are helping information seekers acquire important skills.

Teachers often tell their students *there's no such thing as a stupid question*. But do teachers, especially new ones, heed their own advice (E-Mentoring Program, 2006)? There are times when a beginning teacher may need to seek advice and peers may not have the necessary experience to provide insight. Other educators with whom the beginning teacher has contact are often in a supervisory role, which may prevent the beginning teacher from fully confiding any fears or concerns (Abbott, 2003; Borja, 2002).

Virtual mentoring relationships allow beginning teachers to work with experienced teachers who have no connection to their evaluation (Mehlinger & Powers, 2002). Recognizing that inexperienced teachers will have questions they might not feel comfortable asking their more-seasoned peers or local mentors, the Internet based program, *Education Minnesota* was introduced during the 2003-2004 school year. The virtual mentoring program connects seasoned pros with novices. The experienced teachers who participate in the program find the experience to be rewarding and energizing, as they reflect on their own teaching experiences and provide advice to beginning teachers. In turn, beginning teachers feel free to ask a full range of questions without fear of reprisal.

Used by more than 200 novice teachers last year, e-mentoring paired new teachers with master teachers in the same content areas, grade levels, and school

settings, including urban, suburban, and rural. After 40-plus years of teaching in a number of environments, subject areas, and grade levels, Barbara Pihlgren-Warner, who retired from the Minneapolis public school system and has been an e-mentor since the program inception, says “The program gives everyone who has access to a computer some help that might otherwise only be available in the larger districts” (E-Mentoring Program, 2006, p. 15).

Discussion forums, private virtual conference chat rooms, and downloadable resources, including lesson plans and organizational tools, are all components of the e-mentoring program. Program coordinator, Louise Covert, finds that teachers like having a resource outside their district because they can feel free to ask questions without worrying that they are being evaluated. As written in the E-Mentoring Program (2006), Pihlgren-Warner shares that “the mentees often write to her at night when they are having trouble sleeping” (p. 16). Experts predict that in a few years, new teachers across the country will be able to access local or regional teacher databases (Borja, 2002).

Evans (2004) conducted a case study that examined the perspectives of three first-year teachers and their mentors concerning the use of electronic mail as an enhancement tool for mentoring. A qualitative approach was utilized and consisted of five major sources of data, which included: (1) all electronic mails sent between the researcher and the participating teachers, (2) all field notes from interviews conducted throughout the study, (3) interview transcriptions from all interviews conducted, (4) journals kept by the veteran teachers on their feelings and perspectives experienced during the study, and (5) a transcription of a single focus group meeting at the

conclusion of the study. The research questions that guided this study were:

1. What are the perspectives of first-year teachers and their mentors concerning mentoring through the use of electronic mail?
2. What problems or issues might one experience while using electronic mail for mentoring process?

The perspectives of the participating teachers provided insight into many aspects of using electronic mail in the mentoring process and revealed issues both positive and negative that one must consider if electronic mentoring programs are implemented. Evans (2004) suggested that electronic mentoring is still not fully understood and as a result, many questions must be answered to completely understand the balance that exists between electronic correspondence and traditional mentoring. The findings of this study concluded that electronic mentoring is best used as an enhancement to traditional face-to-face mentoring.

The Novice Teacher Support Project (NTSP) developed by the University of Illinois in Urbana-Champaign offers a site where beginning teachers can turn to their computers to get advice and support from a much larger community of new and master teachers, as well as doctoral students and education professors. The university partners with 40-plus school districts on the initiative, as well as three regional offices of education. Using a special password, more than 100 first-, second-, and third-year teachers have logged on to the NTSP's electronic bulletin board, which has 40 veteran teachers statewide as e-mentors.

The bulletin board affords teachers the opportunity to send and receive messages any time of the day or night. An added advantage of this forum is that

participants can include personal information or post anonymously (Borja, 2002).

Interviews with beginning teachers participating in the NTSP project establish that online mentoring offers access to the outside world and freedom from the isolation of the classroom, pedagogical and emotional support, and an unlimited resource for problem solving (Borja, 2002; Eisenman & Thornton, 1999).

The Illinois program includes a face-to-face component as well, which requires novice teachers and e-mentors to meet in person at least twice a year. University of Texas in Austin, Associate Professor, Judi Harris, a pioneer in the field of telementoring and the originator of welcoming interns and novices with guidance and support (WINGS) online supports the face-to-face element. Harris (2006) remarks, "Such human contact is important because online should complement, not take the place of, in-person mentoring and vice versa" (p. 1).

Abbott's (2003) multiple-case study followed ten new teachers who used telementoring services sponsored by the University of Texas' WINGS program for 15 to 24 months. This protégé-driven service allowed new teachers to address self-perceived induction needs by selecting their own mentors from an online database of profiles submitted by experienced-teacher volunteers. The study looked at beginning teachers' experiences with telementoring as learner centered professional development.

The novice teachers in the Abbott (2003) study exchanged e-mail with their telementors regularly, typically sending or receiving at least one e-mail message per week. E-mail exchanges were facilitated by WINGS staff and were automatically archived on WINGS. These e-mails, interviews with the new teachers, information submitted by the new teachers when they were selecting their mentors, profiles written

by the mentors, and interviews with WINGS staff served as data that were analyzed and organized into themes. These themes developed into three interesting findings.

First, it was discovered that the participants preferred online mentoring support because they were embarrassed to ask for help from teachers or supervisors in their own districts. Second, the new teachers were pleased with the amount of professional and personal support they received from their telementors. Not only did they get practical teaching tips and pointers on assimilation into school culture, but also the beginning teachers received care, empathy, and optimism. In fact, according to Abbott (2003), seven of the ten mentoring relationships grew into “collaboratively reflective professional-development exchanges” (p. viii). Finally, WINGS staff members were instrumental in keeping an open line of communication between new teachers and their mentors by providing much needed technical support.

In another study on beginning teachers and electronic mentoring, Eisenman & Thornton (1999) contacted graduates from the College of Education at Augusta State University teacher development program from the previous year. Through interviewing the recent graduates, researchers gathered information about where they were teaching (if at all), their access to e-mail, their interest in participating in the study, their views on the pre-service program and apprenticeship, their current concerns about teaching, and how they felt electronic mentoring could impact them professionally.

Of the 40 graduates contacted, 27 were currently teaching and interested in the study. Focus group sessions paralleled the interview process and allowed for further probing of identified issues and themes. A LISTSERV was established, connecting the participants electronically. Training was held to help participants understand how to

access the LISTSERV effectively. Participants agreed on a timeline for contact and goals for the project (Eisenman & Thornton, 1999).

Initially, participants were surveyed to determine what value they saw in coming together to form an electronic mentoring network. Participants in the Eisenman and Thornton (1999) study expressed interest in topics which are fairly representative of concerns new teachers face. These included finding resources for teaching, gaining feedback on problems being faced, discussing curricular issues, managing time, and dealing with parents. Another set of topics reflected their need to network with others as a support for innovation and change. They expressed a need to network with other teachers with shared philosophies who were encountering similar challenges in their experiences to implement best practices and student-centeredness.

Interview and focus group session data served as a needs assessment to direct the development of a long range mentoring plan. The plan included the establishment of a LISTSERV, which acted as a means not only for participants to share their concerns, ideas, and experiences, but also as a vehicle by which to focus on key issues (Eisenman & Thornton, 1999).

Study data informed researchers that existing mentoring programs do not provide the types of support necessary for the continued professional development of the novice teacher. Electronic mentoring programs could function as the necessary bridge between the new teachers' professional preparation and their lived experiences in the field (Eisenman & Thornton, 1999).

Summary

This study of the effect of telementoring on beginning teacher self-efficacy was

based on Bandura's (1986) social cognitive learning theory, which is the overarching theoretical framework of the self-efficacy construct. The review of literature consisted of investigations and studies on (1) attrition and retention of beginning teachers, (2) induction and mentoring programs, (3) telementoring programs, and (4) beginning teacher self-efficacy.

The extensive literature review covered the topics, theories, and research that had a great influence in establishing induction and mentoring programs for newcomers to the teaching profession. Although empirical research regarding both telementoring and beginning teacher self-efficacy was limited, descriptive studies and journal articles provided background information and insight in both subject areas.

Concerns of beginning teachers, which directly or indirectly lead to beginning teacher attrition, are consistently reported in current literature and are presented in the review. Beginning teacher concerns included, but were not limited to: (1) overwhelming workloads, (2) a pervasive sense of professional isolation, (3) *reality shock* that the full-time teaching experience is not what novices expected it to be, and (4) lack of support (Abbott, 2003). Research included in this review indicated that many of the concerns expressed by beginning teachers are addressed through the provision of a mentor, an expert teacher who provides guidance and supports the novice through their first years of teaching.

Telementoring programs guide and support beginning teachers and address many of the same issues found in face-to-face mentoring, but are conducted through online communication. Hunt (2005) defines telementoring as, "the process by which two people or groups of people assist each other to grow and learn in a safe and supportive

relationship utilizing technology” (p. 8). Computer-mediated communication offers the capacity for active learning, increased interaction (both quantity and intensity), access to group knowledge, and convenience for both mentees and mentors.

In conclusion, it can be assumed from this research that induction and face-to-face mentoring programs provide the development of the skill and knowledge necessary for the encouragement and retention of beginning teachers. The virtues of mentoring beginning teachers within education have long been extolled by the leaders in the field when it is conducted through face-to-face contact, but little is known about the telementoring approach. The process of mentoring beginning teachers through telecommunications is still a relatively new concept in education, and its effectiveness, when used with first-year teachers and their mentors, is relatively unknown.

The significance of this study was that it adds to the current literature on telementoring. Of the research that does exist on using the Internet for mentoring beginning teachers, few have examined the perspectives of first-year teachers who have participated in mentoring through the use of a discussion board. Electronic communication between first-year teachers and mentors adds to the knowledge of the daily thoughts, concerns, feelings, and needs of the first-year teacher. By examining the perspectives of teachers in this manner, this study’s findings provide information to those who are interested in establishing an online communication forum for first-year teachers and mentors. Based on a review of literature, this study adds to existing studies the various methods available for mentoring beginning teachers.

CHAPTER 3

METHODOLOGY

This chapter describes the methodology used in the study. Perspectives regarding the location, time frame and participants are outlined in the following discussion. Instruments used, data collection, and data analyses are discussed. The construct of self-efficacy and the effect of telementoring on self-efficacy was the primary focus of this research. In addition, concerns of study participants were investigated through discussion board analysis.

Research Questions and Hypothesis

1. What is the effect of a telementoring program on beginning teacher self-efficacy?

Hypothesis: Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy compared to beginning teachers who do not participate.

2. What is the effect of a telementoring program on beginning teacher self-efficacy in the areas of student engagement, instructional practices, and classroom management?

Hypotheses: (1) Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the area of student engagement compared to teachers who do not participate. (2) Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the area of instructional practices compared to beginning teachers who do not

participate. (3) Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the area of classroom management compared to beginning teachers who do not participate.

3. What themes or patterns surfaced in the discussion board postings and are they consistent with the established framework of beginning teacher concerns cited in current literature?

Hypothesis: Discussion board postings in this study will substantiate the established framework of beginning teacher concerns cited in current literature.

General Perspective

As a quasi-experimental study, the research reported here embodies both a quantitative and qualitative perspective. Quantitative measures were used to determine the effect of a telementoring program on beginning teacher self-efficacy. An analysis of discussion board postings provided qualitative data pertaining to beginning teacher concerns.

Research Context

This study was conducted in a city in north central Texas with a population of approximately 100,000 people. The city is located within two hours of two metropolitan areas with populations exceeding a million or more citizens. During 2006-2007, the school district had a population of approximately 14,700 students. The district is composed of 20 elementary schools, four junior high schools, three high schools, an alternative educational placement center, a vocational and career center, a credit

recovery high school, and three head start campuses. It is the third largest employer in the community, employing over 2000 certified and paraprofessional staff.

Each year, an average of 60 first-year teachers are hired by the district and are required to participate in their formal induction/mentoring program, which lasts one year. Two former teachers serve as coordinators and co-direct the mentor program. They pair beginning teachers (mentees) with experienced teachers (mentors) who instruct in the same school, subject area, and grade level when possible. Mandatory training sessions are provided for mentors and mentees as part of the mentor program.

Program coordinators, throughout the first year, monitor the progress of mentees, organize training, and arrange social activities for beginning teachers and their mentors. The induction program provides support for beginning teachers and strives to address the universal problems facing districts such as large numbers of teachers leaving the profession in three to five years, teacher shortages in some subject areas, and beginning teacher competency.

The study included 40 first-year teachers from 15 different campuses. Those teachers selected as mentors had to have three or more years of teaching experience and received a stipend for assisting beginning teachers. As an additional benefit, teachers who agreed to mentor a beginning teacher in some schools received release time and lighter teaching assignments. The district requires that all certified teaching personnel new to the district attend an orientation, but those new to the profession are required to attend the first-year teacher academy, which provides training specifically designed for first-year teachers.

Permission was requested from the program coordinators to conduct the study

during the first semester of the 2006-2007 school year. It was established that the study was doctoral research in educational administration at the University of North Texas and an overview of the research was presented to the coordinators. They responded positively to the idea of providing access to a discussion board for an experimental group of first-year teachers and permission was granted to pursue the project. Likewise, the superintendent of the district gave his approval (Appendix A) to use the district mentor program and its participants for research.

Research Participants

The target population of this study was limited to first-year teachers from grades K-12. Twenty experimental and 20 control group participants were drawn from a sample of first-year teachers involved in a state-mandated formal mentoring program designed and implemented by this district. All participants had access to *face-to-face* mentoring during the fall semester, but only experimental group members received the intervention, which was access to a telementoring discussion board.

The coordinators of the district induction/mentoring program provided a list of first-year teachers hired by the district and their campus mentors for the upcoming school year. The convenience sampling method was used to select subjects for the study from the available defined group.

Even-numbered first-year teachers were placed in the experimental group and odd-numbered first-year teachers became members of the control group. In the beginning there were 20 participants in the experimental group and only 19 in the control group. A first-year teacher hired a week after the initial selection process was added to the control group to equalize the numbers.

A verbal and written explanation of the purpose and benefits of the study and how it was to be conducted was made to all participants at the August 1, 2006, first-year teacher academy. Study participants signifying their willingness to participate in the study signed the university institutional review board informed consent form. Shortly thereafter, the pretest was administered. The control group member that missed the initial pretest opportunity completed the pretest survey at his campus soon after being hired. The response rate for the pretest was 100%.

Prior to completion of the pretest, all participants completed a demographic questionnaire (Appendix B). Information solicited from participants included gender, subject matter, grade level, and method of certification.

Instrumentation

Survey Instrument

A survey instrument called the teachers' sense of efficacy scale (TSES, 2001), developed by Dr. Megan Tschannen-Moran of the University of Texas at Austin and Dr. Anita Woolfolk Hoy, professor at Ohio State University, was used in this study to collect data on beginning teacher self-efficacy. Since the survey instrument was developed at Ohio State University, it is sometimes referred to in the literature as the Ohio state teacher efficacy scale (OSTES), but developers of the survey prefer the name teachers' sense of efficacy scale (Tschannen-Moran & Woolfolk Hoy, 2001). The TSES instrument is found in Appendix C. The instrument was developed as part of a graduate seminar on self-efficacy in teaching and learning in the College of Education at Ohio State University. The developers sought to design a survey that corresponds to the tasks that teachers face daily in schools.

Tschannen-Moran, Woolfolk Hoy and Hoy (1998) based the development of this scale on a thorough review of literature and validated its reliability in numerous studies. They began with an unpublished instrument created by Albert Bandura and then added their own items, focusing on statements representative of frequent teaching activities (Tschannen-Moran, Woolfolk Hoy & Hoy, 1998).

After using factor analysis to test the instrument, Tschannen-Moran & Woolfolk Hoy (2001) recommend using the full scale (either the 24-item long form or 12-item short form) with pre-service teachers because the factor structure is often less distinct for these respondents. Both long and short versions of TSES could be accepted as a reliable and valid instrument for assessing beginning teacher self-efficacy but the 24-item long form was selected for this study.

Permission to use the TSES instrument was requested and granted through e-mail correspondence with Dr. Tschannen-Moran (Appendix D). She requested that a brief summary of the research findings be sent to her at the conclusion of the study. She also provided the uniform resource locator (URL) for her website that provided links to useful documents including the following: long and short version of the TSES survey instrument; directions for scoring the TSES; factor item analysis; and reliabilities for long and short TSES instruments (Appendix E).

The 2001 article, *Teacher Efficacy: Capturing an Elusive Construct*, by Tschannen-Moran & Woolfolk Hoy, is also accessible from the website. This article describes the development of the teachers' sense of efficacy scale and provides information on construct validity. Dr. Tschannen-Moran requested the article be cited whenever the TSES instrument is used for research.

While testing the TSES instrument for reliability, the developers found three moderately correlated factors, which included student engagement, instructional strategies, and classroom management. To determine self-efficacy on these moderately correlated factors, unweighted means of the items that load on each factor were computed. Items that load on each of the three factors are presented in Table 1.

Table 1

TSES (Long Form) Item Analysis of Correlated Factors

Factors	Items
Student Engagement	1, 2, 4, 6, 9, 12, 14, 22
Instructional Strategies	7, 10, 11, 17, 18, 20, 23, 24
Classroom Management	3, 5, 8, 13, 15, 16, 19, 21

Developers of the survey instrument used factor analysis to test the reliability of the instrument by computing an efficacy subscale score for each factor and calculating the mean of the responses to the individual items. The final analysis of the three subscales suggested that both the long form and the short form would reliably measure the construct of teacher efficacy. A total score, as well as three subscale scores, can be calculated with the total score being the most likely means of gauging efficacy (Tschannen-Moran & Woolfolk Hoy, 2001).

In August 2006, members of the experimental group and the control group completed the teachers' sense of efficacy scale survey as a pretest and in December 2006 they completed the same instrument as a post-test. Participants signified their

opinion about each of the 24 items by marking any one of the nine responses in the columns on the right side of the instrument, ranging from (1) *none at all* to (9) *a great deal*. Each response represents a degree on the continuum. The nine point Likert scale is anchored with notations: *none at all*, *very little*, *some degree*, *quite a bit*, and *a great deal*.

Table 2

TSES Reliabilities

	<u>Long Form</u>			<u>Short Form</u>		
	<u>Mean</u>	<u>SD</u>	<u>alpha</u>	<u>Mean</u>	<u>SD</u>	<u>alpha</u>
TSES	7.1	0.94	0.94	7.1	0.98	0.90
Engagement	7.3	1.1	0.87	7.2	1.2	0.86
Instruction	7.3	1.1	0.90	6.7	1.2	0.86
Management	6.7	1.1	0.90	6.7	1.2	0.86

Note. Scale – 9 point Likert from *None at All* to *A Great Deal*

Participants were directed to respond to each of the questions by considering the combination of their current ability, resources, and opportunity to do each of the, *How much can you do* questions in their present position. Sample items include: *How much can you do to get through to the most difficult students? How much can you do to control disruptive behavior in the classroom? How much can you do to motivate students who show low interest in school work?*

Quantitative data for this study were collected through statistical analysis of experimental and control group survey information. A comparison of pre and post-test scores provided the results of the overall effect of a telementoring program on beginning

teacher self-efficacy. Additionally, factor analysis provided subscale information.

Discussion Forum Transcripts

Discussion board postings were sorted into the areas of particular concern for beginning teachers using Jonson's (2002) 10-item list. Postings were cataloged by area of concern and the number of postings was noted. Descriptive analysis of discussion board postings supplied qualitative data for this study.

Procedures Used

Permission was granted by the university institutional review board (IRB) to conduct the study (Appendix F). Participants were selected from a population of first-year teachers, which was furnished by district program coordinators. First-year teachers had already been paired with an experienced teacher who instructs in a comparable grade level and/or subject area and would serve as a mentor.

A sample population of 40 first-year teachers was equally divided between an experimental group and a control group. Using the convenience sampling method every other name on the defined list was assigned to either the experimental or control group. For the purpose of this study, even-numbered first-year teachers became members of the experimental group and odd-numbered first-year teachers became members of the control group.

A survey designed to measure self-efficacy, the TSES, was administered to all beginning teachers in the program prior to the intervention (pretest) and after the intervention (post-test). The pretest was administered at the first-year teacher academy, the district-sponsored induction program for beginning teachers held from 8:30 a.m. to 3:30 p.m. on August 1, 2006.

The telementoring study was introduced to beginning teachers at this meeting and the purpose and benefits of the study, as well as potential risks and/or discomforts associated with the study, were explained. Participants were informed of procedures that would be used for maintaining confidentiality and all aspects of the study were fully explained. Beginning teachers who agreed to participate signed an informed consent form (Appendix G).

Thirty-nine first-year teachers at the meeting agreed to be a part of the study and completed a demographic survey prior to taking the pretest survey. One week later, through the addition of a member to the control group, the two groups were equalized giving both experimental and control groups 20 participants each. Pretest survey data were entered into a database using the Microsoft Excel®³ software program.

During the first-year teacher academy I modeled how to access and utilize the telementoring discussion board. Experimental group participants were invited to go to a university computer lab at the end of the meeting for hands-on experience with the discussion board. Experimental group participants received a packet of information concerning telementoring and the discussion board. Included in the packet was the website address, log on name and password, overview of telementoring, discussion board etiquette, participation guidelines, and schedule of gift card drawings. Packet items can be found in Appendix H.

A local university professor assisted in setting up the discussion board through a local university. The discussion board format enables participants to hold asynchronous conversations and supplemented rather than supplanted the *face-to-face* district-mentoring program. The telementoring program allowed participants to log on seven

³ © 2007 Microsoft Corporation. All rights reserved.

days a week – day or night. It enabled those teachers in the experimental group to interact with their peers and all mentors assigned to first-year teachers in the experimental group.

Discussion forums were set up using the following discussion group titles: (1) main, (2) mentees only, (3) mentors only, and (4) all participants. Main and all participant forums allowed all participants to read and respond to postings. Mentees only and mentors only allowed only members of these respective groups to read and respond to postings. When creating the discussion groups, a central concern was sensitivity and confidentiality. Separate categories or forums were created for interaction. As an example, mentees might have common questions, ideas, or concerns particular to their relationship with a mentor for which they sought input or had suggestions for peers. In a similar manner, mentors might have questions, concerns, or conflicts with mentees for which they sought assistance from peers.

Three additional links were included on the telementoring project homepage: Mail, chat room, and calendar. The mail link provided e-mail addresses for all participants, allowing for private conversations. The chat room provided a forum for synchronous conversations where participants must make a date to meet and converse in real time. The calendar link allowed the researcher to set dates for upcoming events such as drawings and the end of semester celebration. The calendar could also be used as an organizational tool for mentees and mentors in the study. The researcher facilitated, observed, and participated in the discussion board throughout the study.

As an incentive for discussion board participation, a drawing was held every other Friday during the study. Each day that a mentee posted to the discussion board,

his or her name was entered into a drawing for a \$25.00 gift card of his or her choice. Participants were asked to post questions, concerns, ideas, or comments as often as they wished, but they were encouraged to post at least three days a week. The discussion board was monitored daily and the names of members that posted each day were added to the next drawing.

The district-sponsored mentor orientation was held from 8:30 a.m. to 3:30 p.m. on August 3, 2006 at a local university student center. The mandatory mentor orientation was for those teachers who were new to mentoring beginning teachers. Mentors who had previously attended the training were not required to attend. The purpose of the mentor orientation was to allow the district mentor coordinators to familiarize new mentors with the needs of beginning teachers and apprise them of their role as a mentor.

An overview of the telementoring study was presented at the mentor orientation and the role of mentors of first-year teachers in the experimental group was explained. A demonstration was given on accessing the website, logging on to the website, and navigating the discussion board. Mentors involved in the study were invited for hands-on experience at the end of the meeting in a university computer lab.

Mentors received the same packet of information that was given to first-year teachers. The mentors were told that they could access the discussion board as often as they liked, but they were also asked to post a minimum of three days a week. As a participation incentive, mentors were also included in the bi-weekly drawings and guidelines were explained at this meeting.

The week following the first-year teacher academy and the mentor orientation,

instructions for accessing the discussion board were sent through interoffice mail to those mentees and mentors who failed to log on after the presentation at their respective meetings. The same message was sent by e-mail correspondence. Those mentors who were not in attendance at the mentor orientation were sent the telementoring packet and detailed instructions for participation in the study.

In addition to bi-weekly drawings, a variety of means were used to promote discussion board participation. The researcher corresponded with participants through e-mail and interoffice mail encouraging them to log on to the discussion board and assistance was offered to those who were having difficulty accessing the website.

Extrinsic motivation techniques were utilized to encourage participation. Items such as candy, drink coupons, and popcorn were sent via interoffice mail to study participants. These items included a reminder to log on to the discussion board, the website address, and their specific name and password. By contacting the web course tools (WebCT) coordinator at the university I was able to resolve technical difficulties and password glitches.

At the end of the study, all first-year teachers in the experimental group were invited to a dinner on December 7, 2006 at a junior high school library. The catered dinner served a two-fold purpose. It was a celebration of the novice teachers' completion of the first semester and it gave me the opportunity to administer the post-test to those in attendance. As an attempt to entice participants to attend, the final gift card drawing was held this evening and only those present were eligible to win.

The same instrument used for the pretest was used as the post-test. Those in attendance completed The TSES post-test survey. Participants were asked to indicate

their opinion about each of the questions on the survey by marking any one of the nine responses ranging from (1) *none at all* to (9) *a great deal*. First-year teachers were asked to respond to each of the questions by considering the combination of their current ability, resources, and opportunity to do each of the items in their present position.

The following day, surveys were sent to all control group members and those experimental group members who did not attend the dinner. Instructions for completing the survey were attached and a request was made to return the survey as soon as possible by interoffice mail or fax machine.

The next attempt to gather post-test data from study participants was made a week later when another copy of the survey was sent to experimental and control group members who had not completed the survey. Instructions for completion were attached and mentees were asked to return the survey by interoffice mail or by fax machine as soon as possible. This correspondence included a note describing the importance of the post-test survey and a plea for the return of the completed document.

The final request for return of the post-test survey was made two weeks later. Experimental and control group members that failed to return the post-test survey were sent another copy of the instrument and instructions for completion through interoffice mail. A note and two one dollar bills were attached to the survey to encourage the participants to take a break, enjoy a soft drink and a candy bar, and complete the post-test survey. All attempts to retrieve post-test surveys yielded some results.

Although every effort was made to avoid non-response error, it was inevitable that a response would not be received from each individual in the sample. Two

members in the experimental group and three members in the control group failed to complete a post-test survey making the response rate for each group 90% and 85% respectively. Those participants who responded immediately were compared with those who responded after reminders and additional surveys were sent.

Threaded conversations held on the discussion board during the study were cataloged and analyzed. The researcher looked for trends consistent with concerns of beginning teachers expressed in current literature. A list of concerns compiled by Jonson (2002) served as a comparison framework.

Data Analysis

The data were analyzed using several strategies. For question one and hypothesis one, a one-way *ANOVA* analysis for independent samples identified any statistically significant differences in means between the experimental group (received intervention) and the control group (did not receive intervention), using pre and post-test data from the TSES. Telementoring was the independent variable in the analysis while the total score on the TSES post-test was the dependent variable.

For question two and hypotheses one, two, and three, a one-way *ANOVA* analysis for independent samples identified any statistically significant differences in means between the experimental group (received intervention) and the control group (did not receive intervention) using data from the TSES. Telementoring was the independent variable in the analysis while subscale scores on the TSES were the dependent variables.

For question three and hypothesis one, postings to a discussion board by first-year teachers (mentees) and experienced teachers (mentors) who participated in a

telementoring program were collected from August to December 2006. This extensive set of data was analyzed, interpreted, and reported in this study as qualitative data.

Summary

To summarize the aforementioned discussion, it should be emphasized that this quasi-experimental study utilized both quantitative and qualitative measures. Data were collected from a TSES instrument as well as discussion forum transcripts. Survey data were analyzed using a one-way *ANOVA*. Discussion transcripts were analyzed by comparing concerns of beginning teachers in this study to concerns of beginning teachers found in current literature. A list of concerns compiled by Jonson (2002) served as a comparison framework.

CHAPTER 4

PRESENTATION OF RESULTS

As stated in Chapter 1, the study examined the effect of a telementoring program on beginning teacher self-efficacy. Although all participants in the study were involved in the district face-to-face induction/mentoring program, only members of the experimental group and their mentors had access to the telementoring program.

The survey instrument used in this quasi-experimental study was the teachers' sense of efficacy scale (Tschannen-Moran & Woolfolk Hoy, 2001). While looking at the overall effect of a telementoring program on beginning teacher self-efficacy, three subscale scores were computed and examined. These include: (1) self-efficacy in student engagement, (2) self-efficacy in instructional strategies, and (3) self-efficacy in classroom management.

Statistical analysis was used to present assessment findings in this study. In addition to quantitative data, discussion board postings were collected and analyzed and are presented as qualitative data in this chapter as well.

This chapter provides an overview of data collection and participant demographics. Descriptive statistics provide an analysis of pretest and post-test data regarding self-efficacy beliefs of experimental and control group participants. The results are organized by hypotheses and specific research questions guiding this research.

Data Collection

The sample included elementary and secondary beginning teachers in a north central Texas school district. Twenty experimental group participants and 20 control

group participants completed pre and post-test surveys at the beginning and at the end of the study. The return rate on the pretest was 100% for both experimental and control groups with all 40 members completing the survey. Although all participants did not complete the post-test, the return rate was still considered high at 88%. Eighteen members in the experimental group (90%) and 17 members in the control group (85%) completed the post-test survey.

Across the entire dataset there was a small amount of missing data on individual items. One first-year elementary teacher in the control group failed to respond to one question on the pretest survey and left three items blank on the post-test survey. This teacher made note on the documents that because she works with autistic children, she did not feel that she could respond to every item on the survey. In order to keep the sample size in both groups as close to the same as possible ($N = 18$ experimental, $N = 17$ control), where values on the surveys were missing, they were replaced with the factor mean.

For the duration of the study, postings to the discussion board were logged and later analyzed. Concerns discussed by participants in this study were compared with those mentioned in current literature. A list of beginning teacher concerns compiled by Jonson (2002) established a framework for this analysis.

Participant Demographics

Prior to taking the pretest survey, subjects completed a demographic questionnaire providing the researcher with an overview of participant characteristics. Demographic information is presented in Table 3.

Table 3

Population Demographics

Demographics	Total		Experimental Group		Control Group	
	<i>N</i> = 40	Percent	<i>N</i> = 20	Percent	<i>N</i> = 20	Percent
Gender						
Male	10	25%	4	20%	6	30%
Female	30	75%	16	80%	14	70%
Ethnicity/Race						
Anglo	27	68%	13	65%	14	70%
African American	4	10%	1	5%	3	15%
Hispanic	5	12%	4	20%	1	5%
Other	4	10%	2	10%	2	10%
Grade Level						
Elementary	20	50%	10	50%	10	50%
Secondary	20	50%	10	50%	10	50%
Teacher Certif.						
Alternative	7	18%	3	15%	4	20%
Univ. Program	33	82%	17	85%	16	80%

The majority of first-year teachers in the study were female (30 female, 10 male). The composition of the experimental group was 80% female and 20% male and the control group had a similar make up with 70% female and 30% male.

In terms of ethnicity, well over one-half of the first-year teachers identified

themselves as Anglo (68%). Experimental and control groups were comparable with 65% and 70% claiming Anglo respectively. Other ethnic options selected by participants were African American (10%), Hispanic (12%), and Other (10%).

The demographic survey offered *elementary* and *secondary* as choices for teaching assignment grade level. For the purpose of this study, junior high school teachers were grouped with high school teachers and were considered secondary. Participants were equally divided between elementary (50%) and secondary (50%).

Of the 40 first-year teachers in the study, 82% received their teacher training through a university program and 18% were alternatively certified. Eighty-five percent of experimental group members and 80% of control group members received certification through university programs.

Descriptive Statistics

This study used descriptive statistics to analyze data concerning self-efficacy beliefs of experimental and control group participants. Means and standard deviations were computed using the statistical package SPSS™⁴ 14.0. See Table 4 for results.

On the pretest, first-year teachers in the experimental group attained the highest mean in efficacy in classroom management, $M = 6.8020$, $SD = 1.20964$ as compared to the 20 first-year teachers in the control group whose highest score was in efficacy in instructional strategies, $M = 7.1270$, $SD = 0.87375$. Results from the pretest show that both groups scored lowest in efficacy in student engagement, experimental group $M = 6.4210$, $SD = 0.99034$ and control group $M = 6.8145$, $SD = 0.82253$.

⁴ SPSS Inc., <http://www.SPSS.com>

Table 4

Descriptive Statistics for Self-Efficacy

Measurement/ Subscales	Experimental			Control		
	Mean	SD	Std. Error Mean	Mean	SD	Std. Error Mean
Pretest	(n = 20)			(n = 20)		
Engagement	6.4210	0.99034	0.22145	6.8145	0.82253	0.18392
Instructional	6.5900	1.06009	0.23704	7.1270	0.87375	0.19538
Management	6.8020	1.20964	0.27048	7.1145	1.06216	0.23751
Total	6.6035	0.97959	0.21904	7.0170	0.80261	0.17947
Post-test	(n = 18)			(n = 17)		
Engagement	6.0250	1.1448	0.26976	6.56882	0.94874	0.23010
Instructional	6.4828	1.16036	0.27350	6.9553	1.01653	0.24654
Management	6.7106	1.27832	0.30130	7.3982	0.92935	0.22540
Total	6.4033	1.12726	0.26570	6.9729	0.82939	0.20116

Note. Judgments were made on 9-point scales (1 = none at all, 9 = a great deal).

Post-test analysis reflects that all participants obtained the highest mean in efficacy in classroom management, experimental group $M = 6.7106$, $SD = 1.27832$ and control group $M = 7.3982$, $SD = 0.92935$. Lowest mean scores on the post-test for both groups were in efficacy in student engagement, experimental group $M = 6.0250$, $SD = 1.1448$ and control group $M = 6.56882$, $SD = 0.94874$.

In all areas, the variability (i.e., standard deviation) was very similar for each group on all factors on both the pre and post-tests. From the descriptive summary, one

can see that control group mean scores are higher than those of the experimental group on all subscale scores and on the total score. It is also evident that the means of both groups decreased from pretest to post-test.

Hypothesis 1

Hypothesis 1 states: Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy compared to beginning teachers who do not participate in a telementoring program. This hypothesis was designed to answer the question: What is the effect of a telementoring program on beginning teacher self-efficacy?

A one-way analysis of variance (ANOVA) was used to analyze the data showing the effect of the telementoring program on the experimental group as compared to the control group. The dependent variable in the study was self-efficacy beliefs of first-year teachers and the telementoring program served as the independent variable. The level of statistical significance considered acceptable for the study was $p = .05$. Pretest results are presented in Table 5.

Table 5

Analysis of Variance (ANOVA) for Self-Efficacy – Pretest

TSES Factors	SS	df	MS	F	Sig.
Engagement					
Between Groups	1.548	1	1.548	1.869	0.180
Within Groups	31.489	38	0.829		
Total	33.038	39			

(table continues)

Table 5 (*continued*).

TSES Factors	SS	df	MS	F	Sig.
Between Groups	2.884	1	2.884	3.056	0.089
Within Groups	35.857	38	0.944		
Total	38.741	39			
Management					
Between Groups	0.977	1	0.977	0.754	0.391
Within Groups	49.237	38	1.296		
Total	50.213	39			
Total					
Between Groups	1.710	1	1.710	2.132	0.152
Within Groups	30.472	38	0.802		
Total	32.182	39	0.802		

Table 5 indicates there is no significant difference between groups on pretest scores on the three subscales and on the total scale.

Group differences were examined, looking for the treatment effect on the telementored group. Post-test scores can be found in Table 6.

Results of the one-way ANOVA comparison of means between experimental group and control group participants' self-efficacy beliefs is reflected in a total score that proves not to be statistically significant: $F(1, 33) = 2.871, p < .05$. The hypothesis is rejected.

Table 6

Analysis of Variance (ANOVA) for Self-Efficacy – Post-test

TSES Total Score	SS	df	MS	F	Sig.
Between Groups	2.837	1	2.837	2.871	0.100
Within Groups	32.608	33	0.988		
Total	35.445	34			

Note. * $p < .05$

Hypothesis 2

Hypothesis 2 states: Beginning teachers who participate in a telementoring program will show a statistically significant increase in self-efficacy in the areas of (1) student engagement, (2) instructional strategies, and (3) classroom management, compared to teachers who do not participate in a telementoring program. These hypotheses were designed to answer the question: What is the effect of a telementoring program on beginning teacher self-efficacy in the areas of student engagement, instructional strategies, and classroom management? Table 7 provides a statistical analysis of post-test results.

Table 7

Analysis of Variance (ANOVA) for Three Sub-scales of Self-Efficacy – Post-test

TSES Factors	SS	df	MS	F	Sig.
Engagement					
Between Groups	2.580	1	2.580	2.322	0.137

(table continues)

Table 7 (continued).

TSES Factors	SS	df	MS	F	Sig.
Within Groups	36.669	33	1.111		
Total	39.249	34			
Instructional					
Between Groups	1.952	1	1.952	1.634	0.210
Within Groups	39.423	33	1.195		
Total	41.375	34			
Management					
Between Groups	4.135	1	4.135	3.280	0.079
Within Groups	41.599	33	1.261		
Total	45.7363	34			

A one-way analysis of variance (ANOVA) was used to analyze the effects of a telementoring program on an experimental group of first-year teachers who participated in a telementoring program as compared to those in the control group who did not. The dependent variable in the study was self-efficacy beliefs of first-year teachers and the telementoring program served as the independent variable. ANOVA was used to analyze the statistically significant relationship between the experimental group and the control group. Results show no statistically significant difference between groups on the three subscale scores. Hypothesis 2 was rejected.

Hypothesis 3

Hypothesis 3 states: Discussion board postings in this study will substantiate the

established framework of beginning teacher concerns cited in current literature. The hypothesis was designed to answer the question: What themes or patterns surfaced in the discussion board postings and are they consistent with the established framework of beginning teacher concerns cited in current literature?

This study focused on discussion board communication among an experimental group of first-year teachers and their assigned mentors who participated in a telementoring program. I served as a facilitator, observer, and participant. All correspondence among contributors was logged and then analyzed over time.

To answer hypothesis 3, themes and patterns were noted as they emerged. Using a list compiled by Jonson (2002), messages were sorted into 10 specific areas of particular concern for beginning teachers. This list was selected because it provides a concise outline of areas of concern found in current literature.

Messages posted by participants in this study support current literature regarding benefits related to telementoring. Both mentors and mentees commented positively on the availability of support and the ease of access that the discussion board provides. Messages posted to the WebCT discussion board were gathered from the following forums: (1) main, (2) mentees only, (3) mentors only, and (4) all participants. Table 8 depicts the quantity of messages posted to each forum and the total number of messages posted during the study.

Seventy-three percent of the participants eligible to access the discussion board did so. Sixteen of the 20 mentees in the experimental group utilized the discussion board (80%) and 13 of the 20 experimental group mentors (65%) participated. Individual mentees posted from one to 33 messages during the study with an average of eight

postings. The average number of messages posted by mentors was seven. Individual mentors posted from one to 19 messages during the study.

Table 8

Discussion Board Participation – Fall 2006

Discussion Forums	Number of Messages	Percent
Main	4	1%
Mentors Only	57	18%
Mentees Only	104	33%
All Participants	154	48%
Total	319	100%

Messages that could be correlated to Jonson's list were tallied and percentages were calculated. Table 9 presents these findings. Messages that could not be correlated with the list primarily fell into the category of social discourse such as salutations and greetings and acknowledging, praising, and thanking colleagues. Additional messages that could not be correlated were frequently technical or administrative in nature.

Table 9

Areas of Particular Concern for Beginning Teachers (Jonson, 2002)

Concern	Number of Messages	Percent
Colleagues/parents	61	30%
Classroom instruction	43	21%

(table continues)

Table 9 (continued).

Concern	Number of Messages	Percent
Overwhelming workload	28	14%
Classroom Management	21	10%
Time Management	12	3%
High-stakes accountability	11	5%
Solitary work environment	10	5%
Technology in classroom	8	4%
Student motivation	6	3%
Socio-cultural awareness	4	2%

Experimental Group Discussions

During the course of this study, beginning teachers and mentors discussed every area of concern on Jonson's (2002) list, some more frequently than others. The majority of messages were related to relationships with colleagues and parents. For example, one new teacher stated:

Thanks, (. . .)! Meeting my students' parents is one of the things that I am most nervous about! I am relieved to know that I will have the support of my team since we will meet the parents as a group.

Another new teacher stated:

I had a small melt down before *Meet the Teacher* started. I guess because I was overwhelmed with everything up to that point, I kept pushing all those feelings down and they just finally came to a head. My mentor, her student teacher, and the pre-k teacher came in my room to help me with last minute things I hadn't finished and told me things would be all right and not to worry about the things that weren't done [*sic*]. I had nine parents show up and they were SUPER!

A mentor shared advice:

Find something about the student that is positive about the student to tell the parent, before breaking any bad news. If you can always make the first contact that helps [*sic*]. I know that is sometimes difficult [*sic*] but helpful in the long run. Try to end any conversation positive [*sic*] if at all possible.

Classroom instruction was another popular topic of conversation on the discussion board. For example, a beginning teacher wrote:

I think I have a grasp on the concepts, but as far as putting them into practice for instruction there is a lot more to teaching than my university program told me. This is the REAL world.

A second first-year teacher questioned:

Was today a crazy day for anyone else? I have subbed on Halloween before, but nothing compared to today! We did had [*sic*] Math Measurement day today where 5th and 6th grade rotated classes and my class made slime, so that might have made it a bit worse. So anyone else care to share his or her Halloween day?

A mentor reported:

I believe that it is so important that our students know that we make mistakes and that we can usually fix them. That helps to create a safe environment for trial and error learning.

Twenty-eight messages were related to an overwhelming workload. For an example, a first-year teacher wrote:

I came home almost every day practically falling asleep when I opened the front door.

Another beginning teacher commented:

It is such a mountain of paperwork and trying to keep everyone going in the right direction, getting signed papers back to you, and correcting the mistakes of parents, Social Security number issues, and a host of other things. It almost seems futile to try to keep up with it all, but of course you can't afford to get behind.

A mentor said:

I make the Spelling Contract every week for my novice and for myself. It takes time to type up this assessment. I make my novice copies and put them in her box each week. It isn't enough. I need to help her more.

Classroom management was another area of concern discussed. For an example, a beginning teacher reports:

A teacher in our building went around to all of the new teachers and shared with us a packet she received her second year of teaching. This packet has been very beneficial to me. She shared her classroom procedures and stressed that although I am teaching senior, that they too need procedures and routines to follow and not to let up on them once they were established.

Another beginning teacher wrote:

We don't have a Behavior Adjustment Class (BAC) or Behavior Development Class (BDC) [sic] room, but we do have a few that are on special behavior plans and I am having a hard time adjusting my expectations to what is *expected* of them.

A mentor shared:

I meet with my mentor after school or go down during his planning period. He was having some behavior issues and was feeling a little frustrated so I shared some horror stories of my own with him so he would realize we all face those problems.

Twelve messages concerned time management. For an example, a novice teacher stated:

It is a difficult to get required paperwork and assessments done on time and still get to teach.

A second beginning teacher wrote:

I second the more time [sic] in the classroom prior to the start of school! It seems like first year teachers are going in one direction [sic] and veteran teachers in another as far as meetings are concerned. Seems like a scramble to get together and make sure everything is ready to go prior to the start of school. Good luck to all.

A mentor encouraged:

Just do your best and enjoy your work!

Comments were made about high-stakes accountability on the discussion board.

For an example, one beginning teacher wrote:

Being in a Texas Assessment of Knowledge and Skills (TAKS) area, I worry about not preparing my students like I should. There is so much pressure on teachers regarding the tests and it can be overwhelming at times. Making sure that I cover everything is also hard – we have so little time, that fitting it all in can be difficult.

Another first-year teacher commented:

I have been testing my kids senseless (. . . .) I have given the Brigance to the 4 year olds, the Texas Primary Reading Inventory (TPRI) to the Kinders (. . . .) a common assessment to all plus now I am *testing* them again for the report card. When am I supposed to teach or is it by osmosis that they are learning?

An elementary mentor described her plan for addressing high-stakes accountability:

Getting the kids ready for TAKS starts about the second week of school. For me I did TAKS activities at least 3 times a week. I tell my kids that I will get them ready (with no surprises) for their test. You can't wait until Christmas to start, [*sic*] this will put more stress on you and your students. I used the benchmark test to really focus [*sic*] in on the objectives that my students were weak in. I also had the best tutor work with my kids that were struggling. [*sic*] You need to decide which TAKS workbook works best for you and your kids. I also promised them a fishing trip if they did their very best on my test. Of course, they all did and we had a wonderful time.

Several messages spoke of ways in which solitary work environment concerns were being addressed. For an example, a beginning teacher said:

I too feel lucky to have a great support team behind me, and feel like I know [*sic*] only have one Mentor [*sic*] but the whole science team is there for me along with other teachers that see me in the hall. Everyone is always checking on me to make sure that I have everything that I need.

Another beginning teacher offered:

The most beneficial information given me by my mentor has been to stay on top of it. The most comforting thing is that she is in there to support and not add

stress. I look forward to her ideas about how I teach once she is able to observe me in the classroom. I'm sure that will be interesting. I'm certain (. . .) and I have a couple of *above and beyond* mentors.

A mentor stated:

Yes, the only time you see each other during the day is lunch and planning (if you're lucky). Some teachers are in portables, which provides a physical separation [sic] or in different hallways. We tend to get caught up in our children's lives, and don't always have the time or energy to go seek out one another. I think the discussion board is a good way to help. It's a chance to question, let off steam, or just find out what's happening elsewhere. [sic] As an experienced teacher, I've [sic] enjoyed reading some of the postings. They help remind me of ideas I may have used in the past, as well as find out what other novice teachers are feeling so I can remember to check and see if that is an issue for my novice.

Technology was an area of concern that first-year teachers commented on in discussion board postings. For an example, a beginning teacher lamented:

I was without a computer for about 4 days. That was horrible. I couldn't get any of my work done during my conference period. I have no idea how to work *Gradespeed*⁵, but then I did mention to my so-called mentor (I use this term because I'm not sure who it is anymore) that I didn't know how to use *Gradespeed*. Maybe that's why no one has come to my rescue. Since grades are due Friday, I'll figure out how to do it. I sure would like to know how to get on United Streaming or something like that. So far no one has been able to give me the pass codes I need.

A different beginning teacher wrote:

I can't wait to use some of the technology like United Streaming. If I could only get my computer to show up on my tv [sic] or hook it up to a projector I [sic] would be great! I ended up bringing my laptop to hook it up to the projector so my class could play jeopardy for a review before the test. That was a lot of fun and the kids thought it was really cool.

Six discussion board postings concerning student motivation were posted to the discussion board. For an example, a beginning teacher stated:

I have really been struggling trying to reach a few unmotivated students. I attended the Power Hour this week and got several new ideas [sic] I hope to implement-one [sic] I will start next week. I am also going to have my classes competing against each other in the next week or so and hopefully this will

⁵ 1989-2007 Campusware. All Rights Reserved.

motivate a few. There have been several difficult situations but I just ask around and then do whatever I feel is best. I am trying to keep my Gifted and Talented (GT) kids challenged. They don't seem bored-yet-but [sic] I want to keep their attention.

A mentor discussed one of her strategies for motivating students:

When all my students turn in their homework (by class), I reduce the homework for the next night. They never know when I will do this. This helps all to do and turn in their homework on time. Homework passes are given when 20 days have passed and they haven't received a work habits or conduct cut. It doesn't have to be 20 days in a row, just 20 days.

Another mentor commented:

Student Motivation- what's that! [sic] It seems the longer I teach the more I run into a *What's in it for me* attitude with my students. I had one ask me what I would give him for doing his work. He didn't like my answer- a pat on the back. I hear about so many parents rewarding their child with money for their A's, & B's, that the children don't seem to want to work without some kind of reward system in place. We have a special park day on Friday- that's one way I reward my students. The children who aren't having a good week will not participate at the park, just the usual playground at school. Stickers are good, notes home work with some children, but not all. As for helping my new teacher, it's been a little hard for me. Every teacher is willing to do different things with or for their students that I can't advise her as to how to motivate them, because [sic] she may have different feelings about this subject than I do. The main thing I can tell her is that motivating her students will vary from year to year and even student to student. Trial and error works well. find [sic] what that student likes or yearns for and use that to motivate them. Unfortunately that means Austin Powers here I come.

In this study, four beginning teachers discussed issues related to socio-cultural awareness: For an example, the first beginning teacher said:

I was so glad to get the first week out of the way!!! I feel much better already, starting this week. At least now I have somewhat of an idea of what's going on! Even though I did observations at a couple of district high schools, a long with another school district, and student teaching at (. . .), It [sic] isn't the same as teaching here!

An additional first-year teacher commented:

I have 2 bilingual and on [sic] tri lingual [sic] students in my classroom. And even at this level I see the difference [sic] in the language aquisition [sic] The

socioeconomic isn't that much different amongst my students [*sic*] but I do see a struggle in the environments [*sic*] they come from and the one I came from. My mentor is great at keeping me posted on all that I need and if I don't know something I know where to ask.

Participants in this study discussed many of the same issues and concerns found in current literature. Beginning teachers in this study discussed every topic cited by Jonson (2002) as being a particular area of concern for beginning teachers. Hypothesis 3 was supported.

In analyzing remaining data, additional themes emerged including the mentoring program, mentor and mentee responsibilities, and telementoring. During the study, experimental group participants wrote about their principals, colleagues, school procedures, and activities. Also, many of the postings were messages of encouragement and support. Themes and patterns that surfaced in the discussion board postings are consistent with the established framework of beginning teacher concerns cited in current literature. Hypothesis 3 was accepted.

Summary

The results reported in this chapter did not indicate a statistically significant difference between the experimental group and the control group. Discussion board postings substantiated the established framework of beginning teacher concerns cited in current literature.

CHAPTER 5

CONCLUSIONS, DISCUSSION, AND RECOMMENDATIONS

This final chapter of the dissertation restates the research problem and briefly reviews the methodology. The major sections of this chapter include a summary of the results, discussion of the results, implications, and recommendations for future studies.

The purpose of this research was to examine the effect of a telementoring program on beginning teacher self-efficacy. A survey instrument entitled the teachers' sense of efficacy scale (TSES) (Tschannen-Moran & Woolfolk Hoy, 2001) was used to collect data on beginning teacher self-efficacy. Study participants were 40 first-year teachers who were equally divided between an experimental group who participated in a telementoring program and a control group who did not. The control group participated in face-to-face mentoring while the telementoring group participated in both face-to-face mentoring and a discussion board forum.

An analysis of discussion board postings focused on the framework of concerns of beginning teachers found in current literature. A 10 item list of areas of particular concern for beginning teachers compiled by Jonson (2002) served as a reference. Discussion board communication between study participants provided insight into their interactions and documented concerns expressed by first-year teachers. The viewpoints and perspectives expressed supply a qualitative component for this mixed methods quasi-experimental study.

The research reported here embodies both a qualitative and a quantitative perspective. The dependent variable in the study was self-efficacy beliefs of first-year teachers and the telementoring program served as the independent variable. The

research questions investigated were:

Research Question 1: What is the effect of a telementoring program on beginning teacher self-efficacy?

Research Question 2: What is the effect of a telementoring program on beginning teacher self-efficacy in the areas of student engagement, instructional practices, and classroom management?

Research Question 3: What themes or patterns surfaced in the discussion board postings and are they consistent with the established framework of beginning teacher concerns cited in current literature?

The information presented in this chapter is reported in the following manner: a summary of the findings related to research questions 1 through 3, discussion of the major findings and general conclusions, implications for practice, and recommendations for further study.

Summary of Major Findings

Though limited in scope, this study provided meaningful results. A demographic survey administered to study participants revealed that experimental group members and control group members were closely matched on each demographic variable. Through statistical analysis, descriptive statistics for both groups were computed. The similarity of mean scores between the two groups further authenticated the similarity of the two groups. Comparable groups narrow the possibility that post-test differences can be attributed to characteristics of the group, other than the experimental conditions to which they were assigned.

The teacher's sense of efficacy scale (TSES), a reliable survey instrument used

in the study as a pretest and post-test, contributed to the validity of the study. The use of the same instrument for test-retest purposes made the findings more compelling.

With regard to the effect of a telementoring program on beginning teacher self-efficacy, pretest and post-test data showed that there was no significant statistical difference between the experimental group who participated in the telementoring program and those in the control group who did not. Control group participants displayed a stronger sense of self-efficacy in terms of higher mean scale and subscale scores on the post-test, but these stronger scores did not reach the level of being statistically significant.

Experimental group mean scores decreased from pretest to post-test in all three subscale areas: student engagement, instructional strategies, and classroom management indicating a decline in self-efficacy. The control group showed a decrease in student engagement and instructional strategies, but a slight increase in classroom management. Although there was an increase, it was insufficient to provide a statistically significant result. On both tests, control group participants exhibited higher scale scores indicating stronger self-efficacy beliefs.

Assessment of discussion board messages revealed that experimental group members discussed topics representative of areas of particular concern for beginning teachers found in current literature and specifically Jonson's (2002) 10 item list. Telementoring draws inspiration from traditional mentoring relationships and provides a forum for collaboration and collegiality. Its flexibility of time and location allows participants to read, react, respond, and reflect at their convenience (Price & Chen, 2003).

Experimental group teachers and mentors utilized the discussion board seven days a week and posted messages as early as 6:00 a.m. and as late as 12:00 midnight. Use of the discussion board was at its peak during the months of August and September. The number of messages posted decreased during the course of the study, which could be attributed to an increase in workload and a decrease in free time. Price and Chen (2003) attribute participation variance to differences between participant motivation, involvement, personal characteristics, and value placed on the activity, and suggest that participation and effectiveness for the duration of telementoring programs may vary dramatically.

Discussion of Major Findings

The results of the study support theories and research examined in the literature review. Bandura's self-efficacy theory, induction and mentoring, self-efficacy, and telementoring research all coincide with the findings of this study.

The experimental group members who participated in the telementoring program did not make statistically significant gains over control group members who did not participate. One possible explanation could be that the telementoring program was provided to the experimental group as a supplement to the district induction/mentoring program. Although control group members did not participate in the telementoring program, they did participate in the district induction/mentoring program, a quality formal mentoring program.

An average of 60 beginning teachers have been hired yearly since the district induction/mentoring program was established during the 2001-2002 school year. This district has consistently retained large numbers of beginning teachers. The above

average retention rate of novice teachers, appears to be a testimony to the quality of its mandated formal mentoring program. During the time period from 2001 to 2005, the average number of novice teachers retained after one year was 96%, after two years 92%, and after three years 86%. National educational research reports that, of the new teachers who begin teaching in any given year, 15% leave at the end of their first year, 20% leave within the first two years, and 33% leave within the first three years (Hare & Heap, 2001; NCES, 1999; Darling-Hammond, 1997; NCTAF, 1996; Huling-Austin, 1992).

A second factor may be considered as to why no statistically significant difference was found between the experimental group and the control group. Members of both groups displayed high levels of self-efficacy at the beginning of the study. Although mean scale scores were close on the pretest, the control group exhibited higher scores reflecting a stronger sense of self-efficacy than the experimental group. Statistically significant results are often more difficult to obtain in areas that are functioning at elevated levels (i.e. district mentoring program and beginning teacher self-efficacy in this study).

High levels of self-efficacy at the beginning of the study for both groups could be contributed to the fact that the majority of first-year teachers were certified through a university program rather than alternatively. This idea is substantiated by a study of 3,000 beginning teachers. Darling-Hammond, Chung, and Frelow (2002) found that traditionally prepared teachers were more successful and more highly rated than teachers who entered teaching through alternative programs or without preparation. In addition, traditionally prepared teachers were found to be superior to alternatively

prepared teachers in nearly every dimension of teaching including, classroom management, curriculum and assessment development, use of teaching strategies, awareness of differing learning styles, and their knowledge of students.

The decrease in self-efficacy beliefs for both groups from pretest to post-test in the majority of areas may be attributed to what educational researchers refer to as phases of first-year teachers' attitudes toward teaching (Moir, 1999). The continuum begins in August with beginning teachers in the anticipation stage. By the middle of September to the end of October they are in the survival stage. From November to December they are experiencing the disillusionment stage. Between the beginning of February and the middle of March they move into the rejuvenation stage. By the first of April they are in the reflection stage, which leads back to the anticipation stage (Moir, 1999). The time frame of this study was from the beginning of August (anticipation phase) to the first of December (disillusionment stage). Figure 1 provides a graphic representation of the continuum of attitudinal phases experienced by first-year teachers.

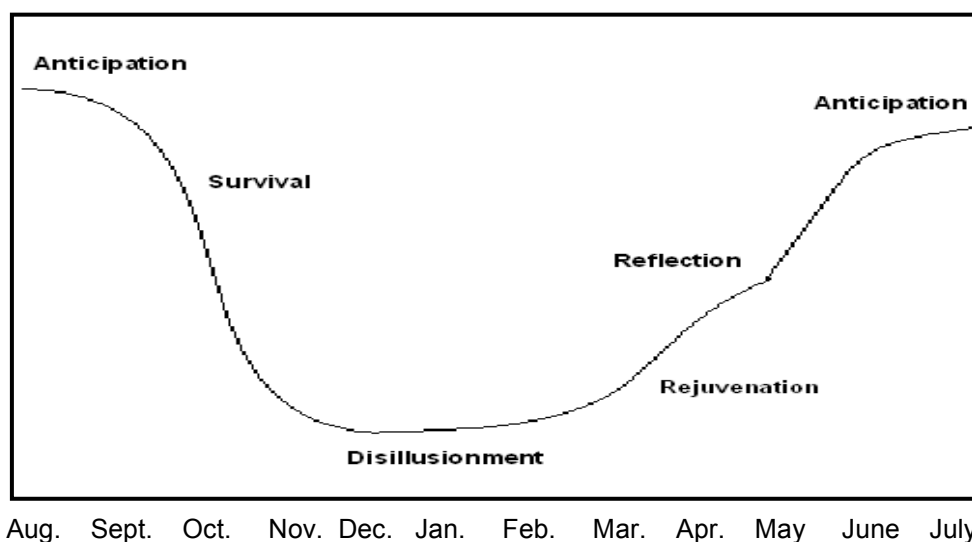


Figure 1. The phases of a first-year teacher's attitude toward teaching (Moir, 1999).

In spite of the absence of statistically significant differences between experimental and control groups on the construct of self-efficacy, qualitative data generated by discussion board interaction among experimental group participants indicated that the telementoring program provided a forum for collaboration and collegiality. Wong (2003) writes that people crave connection; new teachers want more than a job. They want hope, they want to contribute to a group, and they want to make a difference. Belonging, a basic human need, provides the key to keeping skilled teachers. Structured, intensive induction/mentoring programs can provide the connection that beginning teachers need.

Telementoring offers easy access to support, information, and resource experts. Telementoring can construct a virtual continuum where all parties involved mediate questions, answers, and discussion (Price & Chen, 2003). There were 319 messages posted to the all-members discussion board forum. In these discussions, both first-year teachers and mentors expressed their views and offered positive comments on their ability to interact online.

Many times, experimental group members logged on to the discussion board to read comments made by others, but did not post. The asynchronous nature of the discussion board allowed participants to adapt aspects of the discussion board to meet their needs. Under ideal conditions, in-person and cyber discussions will complement and enrich each other. The group will come to recognize the pros and cons of each realm. It will learn to maximize the advantages and minimize the disadvantages of each. The degree of success is the degree to which the group can effectively integrate the two. When the group moves fluidly from one realm to the other, it allows both realms to

give expression to all important group functions, such as brainstorming, decision-making, problem solving, socializing and conflict resolution. Then the group has fully succeeded in extending itself into cyberspace (Suler, 2004). In spite of statistically insignificant results, first-year teachers and mentors in this study utilized the discussion board, and they were successful at integrating the telementoring program with face-to-face mentoring.

Implications for Practice

Since electronic mentoring is a relatively new concept in the world of education, there are many issues that must be addressed in future research studies. One aspect that should be further investigated is the aspect of face-to-face mentoring versus online mentoring (Evans, 2004). In this study, telementoring served as a supplement to an established face-to-face district-sponsored induction/mentoring program for beginning teachers.

This study's findings maintained the perspective of current research that electronic mentoring should be used to supplement rather than supplant face-to-face mentoring programs. In this study, first-year teachers received one-on-one mentoring. Mentees were matched with a veteran teacher on their own campus with whom they had weekly or daily contact. Discussion board messages provided the most significant findings in this study.

On a number of occasions, the content of a discussion board message posted by a first-year teacher was information, advice, or an idea given to them by their mentor or other knowledgeable teacher at their campus. In this case, the discussion board extended the face-to-face mentoring program and served as a staff development

medium for both mentees and mentors. The literature reviewed in this study indicates that many times mentors benefit professionally and self-efficaciously as a result of their willingness to mentor a novice teacher. Qualitative data collected from discussion board messages in this study appear to confirm this concept.

Social discourse was another aspect of discussion board use in this study. The message content of many postings was either exclusively or partially used for greeting, praising, encouraging, or commiserating with fellow teachers. Experimental group members used the discussion board to *chat* as well as seek answers to questions and submit information. In this regard, participants used the discussion board as a tool for *human connection*, which is an integral ingredient found in face-to-face mentoring. The loss of the human factor in text-based communication, such as discussion board forums, is often cited as a problem. Through their discussions, the participants in this study created an environment of community spirit. They welcomed members to the discussion board when they logged on for the first time, they congratulated teacher-of-the-year nominees, and they rekindled former friendships via their messages. Loss of the human factor did not appear to be a problem in this study.

Participants in electronic mentoring programs have complained that discussing issues in a text-based manner through email messages or discussion board postings is time-consuming due to the time involved with typing (Evans, 2004). Teachers who find the typing tiresome most likely would participate less. Since the mentoring relationship thrives on communication, the lack of participation would devastate an electronic mentoring program. Participants in this study did not express difficulty with text-based communication.

Telementoring research suggests that for its potential to be maximized all participants should be competent in necessary technology skills (Khine, Yeap, & Lok, 2003). Two minor problems were observed in this study. The first was that participants were at varying technological skill levels. The second was the occurrence of a few minor technological problems at the beginning of the study, which hampered participation.

A technologically skilled facilitator who is capable of providing training and facilitating discussion board interactions is a necessity to a telementoring program. In addition, facilitators need to have the ability and interest to stimulate discussions through thought provoking questions (Khine, et al, 2003). The nature of the facilitator's responsibilities in a telementoring program is dependent largely upon the ways, in which particular telementoring projects are structured,

Facilitators act as gentle guides to participants, developing the norms and rules as they go. Facilitators must be careful to assist and suggest, rather than direct. This can be difficult if the electronic team is not communicating regularly or effectively. It is essential that participants assume responsibility for the success of the exchange (O'Neill & Harris, 2005). Knowledge gained through implementation of this study validates that the role of the facilitator is substantial.

This study was limited to first-year teachers and their mentors, and the results should be seen as applying specifically to this population. Although all mentees involved in this study were first-year teachers, one can safely surmise that telementoring programs can be used effectively as a discussion forum for mentees and mentors during the second and third years as well. It could also be used as a discussion forum for additional members of the educational community (i.e. university professors,

curriculum specialists and cooperating teachers).

Other populations or subgroups may also benefit from telementoring programs since it is a viable program whose sole purpose is to provide a means of communication between professional educators. Telementoring fosters collegiality and cooperation among peers, and it creates a climate of continuous professional development.

Presently, many teacher preparation programs encourage informal group discussion and one-to-one communication online during teaching internships and after graduation. Several larger scale school-university partnerships that support teacher induction with use of online tools and resources have emerged. These programs include: University of Illinois novice teacher support project, Milwaukee Public Schools/Harvard University professional support portal, and University of Texas at Austin's WINGS (Welcoming Interns and Novices with Guidance and Support) Online project (Harris, 2006). Educators working with beginning teachers can use the results of this study to implement telementoring programs that have a great potential to meet the needs of this population. The study showed beginning teachers using a telementoring program as a supplement to face-to-face mentoring.

Educators must keep in mind that not only is it important to hire the best and the brightest teachers who are available to instruct our children, but it is equally important to provide support for beginning teachers. Establishment of induction/mentoring programs, which reduce the rate of teacher attrition while enhancing professional success, is the long-range goal of all types of mentoring programs. Telementoring provides an alternative method of communication that fosters interaction between mentees and mentors.

The discussion board in this study provided a fine forum for communication between first-year teachers and mentors. Even though, at this time it is recommended that telementoring should be used as an enhancement to a traditional face-to-face induction/mentoring program, rather than the sole source of mentoring for beginning teachers.

As a secondary principal and one who is responsible for staffing a school with highly qualified teachers, telementoring is an attractive addition to face-to-face mentoring. The asynchronous nature of telementoring allows busy educators to communicate with each other at their convenience, day or night, seven days a week. The more opportunities novice teachers have to interact with veteran teachers the better.

The discussion board in this study allowed each first-year teacher to communicate with 39 other professional educators in the experimental group. The opportunity that this affords for staff development for all involved is very appealing. Discussion boards may be configured in limitless ways and are capable of facilitating communication between the following groups: campus staff, district elementary staff, district secondary staff, university and district staff, central office and campus staff. As an example, the Internet has opened a wide range of communication opportunities. Educators must proceed cautiously, but assertively, and take advantage of technology innovations in all areas. Further studies must be conducted to understand the full potential of electronic mentoring.

Recommendations for Further Study

This study provides a baseline for future research of telementoring programs.

As there have been few studies on telementoring, the following are presented as suggestions for future research:

1. Design a study that measures the effect of a telementoring program on beginning teacher self-efficacy using randomly selected participants from school districts in other locations.
2. Design a study that measures the effect of a telementoring program on beginning teacher self-efficacy by gender - between females in experimental and control groups and between males in experimental and control groups.
3. Design a qualitative study using focus groups to measure the impact of a telementoring program on randomly selected participants during their first three years in the profession.
4. Design a descriptive study of telementoring among first-year teachers, university professors, and mentors monitoring for message flow and function patterns.
5. Design a study using an experimental group and a control group that measures the effect of a telementoring program on beginning teacher self-efficacy at the end of each year for three years.
6. Design a study using an experimental and control group that measures the effect of a telementoring program on novice teacher retention for three years.
7. Design a longitudinal study in which data are collected during the teacher preparation program, after the first-year of teaching, and after a few

years in the profession. Researchers may look to which sources of self-efficacy information appear more influential at different stages of a teacher's career.

8. Design an experimental study using a telementoring program as a sole source of mentoring for a group of first-year teachers.
9. Design an experimental study using a telementoring program as a sole source of mentoring, between a group of university program certified first-year teachers and a group of alternatively certified first-year teachers.

Summary

Mentoring is the establishment of a personal relationship for the purpose of professional instruction and guidance (Jonson, 2002). One of the major shifts in education today is an increased tendency toward the use of computer-mediated communications or telementoring. Telementoring offers novice teachers a place to turn to get advice and support from not one, but a large group of mentors as well as peers. For beginning teachers, mentors can be virtual colleagues, content experts, intellectual and emotional supporters and serve as a vital part of the teaching team (Mather, 1997).

Telementoring programs forge strong connections between beginning teachers and mentors. Relationships are established that sustain beginning teachers in times of self-doubt and anxiety associated with the first years of teaching. The gains from such an association can have an extensive impact on beginning teacher self-efficacy during the most sensitive period of their career. The impact can translate into present and future success for teachers and meet the ultimate goal of educators, which is student success.

APPENDIX A
PERMISSION LETTER



**WICHITA FALLS
INDEPENDENT
SCHOOL DISTRICT**

Dawson R. Orr, Ph.D.
Superintendent

1104 Broad • P.O. Box 97533
Wichita Falls, Texas 76307-7533
Phone (940) 720-3303 • FAX (940) 720-3228
E-mail: dorr@wfisd.net

June 28, 2006

Ms. Linda Muehlberger
1608 St. John St.
Wichita Falls, TX 76302

Dear Linda:

I have read and understand the project proposal that you submitted regarding seeking permission to conduct a study as doctoral research with the WFISD induction program. I give permission for you to perform the project with assistance from the participants in the WFISD induction program.

Sincerely,

A handwritten signature in dark ink, appearing to read "Dawson R. Orr".

Dawson R. Orr, Ph.D.
Superintendent of Schools

BOARD OF TRUSTEES

Larry Scott, President	Reginald Blaw, Vice President	Bob Payton, Secretary
Ken Hines	Marty McBride	Trey Sealla
		Kirk Wolfe

APPENDIX B
DEMOGRAPHIC QUESTIONNAIRE

DEMOGRAPHIC QUESTIONNAIRE

SURVEY NUMBER _____

1. What is your gender?

- ☐ Male
- ☐ Female

2. What is your racial identity?

- ☐ African American
- ☐ White, Non-Hispanic
- ☐ Hispanic
- ☐ Other

3. What grade level(s) do you teach?

- ☐ Elementary
- ☐ Middle
- ☐ Secondary

4. What subject matter do you teach?

- ☐ Elem. (Self-Contained)
- ☐ Math
- ☐ Science
- ☐ Language Arts
- ☐ Social Studies

5. How did you become certified?

- ☐ Teacher Certification Program
- ☐ Alternative Certification

APPENDIX C
TSES INSTRUMENT

Teacher Beliefs - TSES

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for teachers. Your answers are confidential.

Directions: Please indicate your opinion about each of the questions below by marking any one of the nine responses in the columns on the right side, ranging from (1) "None at all" to (9) "A Great Deal" as each represents a degree on the continuum.

Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position.

	None at all	Very Little	Some Degree	Quite A Bit	A Great Deal				
1. How much can you do to get through to the most difficult students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
2. How much can you do to help your students think critically?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
3. How much can you do to control disruptive behavior in the classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
4. How much can you do to motivate students who show low interest in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
5. To what extent can you make your expectations clear about student behavior?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
6. How much can you do to get students to believe they can do well in school work?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
7. How well can you respond to difficult questions from your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
8. How well can you establish routines to keep activities running smoothly?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
9. How much can you do to help your students value learning?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
10. How much can you gauge student comprehension of what you have taught?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
11. To what extent can you craft good questions for your students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
12. How much can you do to foster student creativity?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
13. How much can you do to get children to follow classroom rules?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
14. How much can you do to improve the understanding of a student who is failing?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
15. How much can you do to calm a student who is disruptive or noisy?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
16. How well can you establish a classroom management system with each group of students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
17. How much can you do to adjust your lessons to the proper level for individual students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
18. How much can you use a variety of assessment strategies?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
19. How well can you keep a few problem students from ruining an entire lesson?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
20. To what extent can you provide an alternative explanation or example when students are confused?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
21. How well can you respond to defiant students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
22. How much can you assist families in helping their children do well in school?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
23. How well can you implement alternative strategies in your classroom?	①	②	③	④	⑤	⑥	⑦	⑧	⑨
24. How well can you provide appropriate challenges for very capable students?	①	②	③	④	⑤	⑥	⑦	⑧	⑨

APPENDIX D

PERMISSION TO USE TEACHER SENSE OF EFFICACY SCALE
(TSES) INSTRUMENT

Reminder: AOL will never ask you to send us your password or credit card number in an email. This message has been scanned for known viruses.

From: MeganTM@aol.com
To: LinMueh@aol.com
Subject: Re: Survey
Date: Thu, 22 Jun 2006 4:48:06 PM Eastern Daylight Time

Linda,

You may have permission to use my Teacher Sense of Efficacy scale in your dissertation research if you think it would be useful in your work. You can download a copy from my website, which you can access through the link below. You can also download my 2001 Teaching and Teacher Education article that reports on the development of the instrument and should be cited if you use the instrument.

There is no charge for the use of the instrument for scholarly research, but I would like to receive a brief summary of your results if you do use my instrument.

Good luck in your study!

All the best,

Megan Tschannen-Moran
College of William and Mary
The School of Education
PO Box 8795
Williamsburg, VA 23187-8795
Telephone: 757-221-2187
<http://www.MeganTM.com>

In a message dated 6/13/2006 6:12:16 P.M. Eastern Daylight Time, LinMueh writes:

Dr. Tschannen-Moran,
I am beginning my dissertation entitled "Effects of Telementoring on Beginning Teacher Efficacy". I need a pre and post test survey that measures the efficacy of the beginning teacher (pre-teaching and after the 1st semester of teaching). You have done some great work in the field of teacher efficacy and I was wondering if you could suggest an instrument that would measure efficacy beginning teachers involved in a face-to-face + discussion board mentoring program. I would really appreciate your help.
Thank you,
Linda Muehlberger

APPENDIX E

DIRECTIONS FOR SCORING THE TEACHER SENSE OF EFFICACY SCALE (TSES)

Directions for Scoring the Teachers' Sense of Efficacy Scale¹

Developers: Megan Tschannen-Moran, College of William and Mary
Anita Woolfolk Hoy, the Ohio State University.

Construct Validity

For information the construct validity of the Teachers' Sense of Teacher efficacy Scale, see:

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783-805.

Factor Analysis

As we have used factor analysis to test this instrument, we have consistently found three moderately correlated factors: *Efficacy in Student Engagement*, *Efficacy in Instructional Practices*, and *Efficacy in Classroom Management*. At times, however, the make up of the scales may vary slightly. With preservice teachers we recommend that the full scale (either 24-item or 12-item short form) be used, because the factor structure often is less distinct for these respondents.

Subscale Scores

To determine the *Efficacy in Student Engagement*, *Efficacy in Instructional Practices*, and *Efficacy in Classroom Management* subscale scores, we compute unweighted means of the items that load on each factor. Generally these groupings are:

Short Form

Efficacy in Student Engagement: Items 2, 4, 7, 11
Efficacy in Instructional Strategies: Items 5, 9, 10, 12
Efficacy in Classroom Management: Items 1, 3, 6, 8

Long Form

Efficacy in Student Engagement: Items 1, 2, 4, 6, 9, 12, 14, 22
Efficacy in Instructional Strategies: Items 7, 10, 11, 17, 18, 20, 23, 24
Efficacy in Classroom Management: Items 3, 5, 8, 13, 15, 16, 19, 21

Reliabilities

In the study reported in Tschannen-Moran & Woolfolk Hoy (2001) above the following reliabilities were found:

	Long Form			Short Form		
	Mean	SD	alpha	Mean	SD	alpha
TSES	7.1	.94	.94	7.1	.98	.90
<i>Engagement</i>	7.3	1.1	.87	7.2	1.2	.81
<i>Instruction</i>	7.3	1.1	.91	7.3	1.2	.86
<i>Management</i>	6.7	1.1	.90	6.7	1.2	.86

¹ Because this instrument was developed at the Ohio State University, it is sometimes referred to as the *Ohio State Teacher Efficacy Scale*. We prefer the name, *Teachers' Sense of Efficacy Scale*.

APPENDIX F
IRB APPROVAL LETTER



Office of Research Services

DISCOVER THE POWER OF IDEAS

July 20, 2006

Linda Muehlberger
Department of Teacher Education and Administration
University of North Texas

RE: Human Subjects Application No. 06-235

Dear Ms. Muehlberger:

Your proposal titled "The Effects of Telementoring Programs on Beginning Teacher Efficacy" has been approved by the Institutional Review Board as permitted under federal law and regulations governing the use of human subjects in research projects 45 CFR 46.101. **Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, July 20, 2006 through July 19, 2007.**

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.

Please contact Shelia Bourns, Research Compliance Administrator, ext. 3940 or Boyd Herndon, Director of Research Compliance, ext. 3941, if you wish to make such changes or need additional information.

Sincerely,

A handwritten signature in black ink, appearing to read "Scott Simpkins".

Scott Simpkins, Ph.D.
Chair
Institutional Review Board

APPENDIX G
INFORMED CONSENT FORM

University of North Texas Institutional Review Board

Informed Consent Form

Before agreeing to participate in this research study, it is important that you read and understand the following explanation of the purpose and benefits of the study and how it will be conducted.

Title of Study: The Effects of Telementoring Programs on Beginning Teacher Efficacy

Principal Investigator: Linda S. Muehlberger, a graduate student in the University of North Texas (UNT) Department of Educational Administration.

Purpose of the Study:

You are being asked to participate in a research study, which involves: taking a pretest survey and a post-test survey measuring first-year teachers' sense of efficacy. The instrument entitled the Teachers' Sense of Efficacy Scale will be used for both the pretest survey and the post-test survey. Participants will be asked to post questions, answers, comments, concerns, or feelings on a WebCT discussion board during the Fall Semester 2006. At the end of the Fall 2006 semester, first-year teachers will answer focus group questions provided by the researcher.

Study Procedures:

You will be asked to take two surveys which will take approximately 30 minutes each and participate on the WebCT discussion board with other first-year teachers and mentor teachers during the Fall Semester 2006. Participants will be asked to post questions, answers, comments, concerns, or feelings at least three times a week. Participants will spend approximately 1-2 hours a month communicating on the discussion board.

Foreseeable Risks:

This study does not involve any foreseeable risks for participants.

Benefits to the Subjects or Others:

We expect the project to benefit you because telementoring will provide an additional opportunity for first-year teachers to communicate and collaborate. Through the WebCT discussion board, participants will be able to ask questions, answer questions, make comments, and express concerns or feelings to other first-year teachers, mentors, the researcher, a university professor, and/or coordinators of the mentoring program.

Compensation for Participants:

As an incentive for posting to the discussion board, mentee and mentor names will be placed in a drawing for gift cards. Gift cards will be in the amount of \$20.00 each. Drawings will occur bi-weekly during the course of the study.

Procedures for Maintaining Confidentiality of Research Records:

Signed consent forms and coded survey results will be kept in separate locations. Surveys will be coded and names will not be used. Confidentiality of individual information will be maintained in all publications or presentations regarding the results of the study.

Questions about the Study

If you have any questions about the study, you may contact Linda S. Muehlberger at telephone number (940) 720-3035 or (940) 767-5818 or Dr. Johnetta Hudson, Faculty Advisor, at UNT Department of Educational Administration, at telephone number (940) 565-4952.

Review for the Protection of Participants:

This research study has been reviewed and approved by the UNT Institutional Review Board (IRB). The UNT IRB can be contacted at (940) 565-3940 with any questions regarding the rights of research subjects.

Research Participants' Rights:

Your signature below indicates that you have read or have had read to you all of the above and that you confirm all of the following:

- Linda S. Muehlberger has explained the study to you and answered all of your questions. You have been told the possible benefits and the potential risks and/or discomforts of the study.
- You understand that you do not have to take part in this study, and your refusal to participate or your decision to withdraw will involve no penalty or loss of rights or benefits. The study personnel may choose to stop your participation at any time.
- You understand why the study is being conducted and how it will be performed.
- You understand your rights as a research participant and you voluntarily consent to participate in this study.
- You have been told you will receive a copy of this form.

Printed Name of Participant

Signature of Participant

Date

For the Principal Investigator or Designee:

I certify that I have reviewed the contents of this form with the participant signing above. I have explained the possible benefits and the potential risks and/or discomforts of the study. It is my opinion that the participant understood the explanation.

Signature of Principal Investigator or Designee

Date

APPENDIX H
TELEMENTORING PACKET

Make sure you give your participants my email address and have them label the subject line **XISD Mentoring** (if they should have any computer problems), give them this information for their computer <http://distance.mwsu.edu/webct.asp> this is the log on page that contains all the FAQ's, browser tune-up and other helpful information. Good luck,

Asst. Director of Distance Education

xxx University

Address

City, State, Zip

Office: telephone number

User ID: firstname.lastname (notice the dot between first and last name)

Password: firstname

Example: linda.muehlberger
 linda

Make sure you give your participants my email address and have them label the subject line **WFISD Mentoring** (if they should have any computer problems), give them this information for their computer <http://distance.mwsu.edu/webct.asp> this is the log on page that contains all the FAQ's, browser tune-up and other helpful information.

Asst. Director of Distance Education

xxx University

Address

City, State, Zip

Office: telephone number

User ID: firstname.lastname (notice the dot between first and last name)

Password: firstname

Example: linda.muehlberger
 Linda



What is Telementoring?

- ✓ Communication online via e-mail, discussion Boards, or Instant Messaging;
- ✓ Supplement to face-to-face Mentoring programs;
- ✓ Great way to collaborate and build relationships with your Mentor, other mentors, and other first-year teachers;
- ✓ Share lessons, strategies, and best practices;
- ✓ No time or place constraints (you can post on the discussion board in your robe);
- ✓ Post a question in the evening and have the answer the next morning before School; and
- ✓ First-year teachers have easy access to supportive information and resource experts (Mentors).

Discussion Board Etiquette

- ❖ Be careful posting anything that is personal to you or others. Be considerate and kind to colleagues.
- ❖ If your posting is for a specific person or group, make sure you address it to them. Realize, however, that others will probably read it.
- ❖ Make sure everyone realizes when you are trying to be funny. It is easy for messages to be misinterpreted since there are no physical gestures or voice inflections that accompany the text.
- ❖ When responding to someone's comments, explain to whom and what you are commenting on. Do not include their whole posting. Try to use only the appropriate quotes or summary.
- ❖ Remember to read what has previously been posted by others to avoid repeating comments.
- ❖ Make sure you are posting under the appropriate heading or thread.
- ❖ Be brief when posting. Since reading other's comments or articles can be very time consuming, try to be straight to the point.

First-year teachers and Mentors,

Discussion board Participation Incentives

each day that you log on to the discussion board and post questions, answers, comments, concerns, or share ideas with others, your name will be placed in a drawing for a **\$25.00** gift certificate of your choice:

- **Olive Garden**
- **On the Border**
- **Chili's**
- **Best Buy**
- **Wal-Mart**
- **Dillard's**

You are welcome to log on to the WebCT discussion board as often as you would like, but please log on at least **three days a week**.

The more that you participate, the better your chances!

A winning name will be drawn every two weeks during the study. The following are drawing dates:

- **Friday, August 25th**
- **Friday, September 8th**
- **Friday, September 22nd**
- **Friday, October 6th**
- **Friday, October 20th**
- **Friday, November 3rd**
- **Friday, November 17th**
- **Friday, December 1st**

The Winner of Each Drawing Will Be Posted to WebCT.

REFERENCES

- Abbott, L. D. (2003). *Novice teachers' experiences with telementoring a learner-centered professional development*. Unpublished doctoral dissertation, University of Texas, Austin. Retrieved August 8, 2006, from <http://dspace.lib.utexas.edu/bitstream/2152/63/1/abbottld036.pdf>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review* 84, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist* 28(2), 117-148.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Billingsley, B. W. & Cross, L. H. (1991). Teachers' decisions to transfer from special to general education. *The Journal of Special Education*, 24(4), 496-511.
- Birkeland, S. & Johnson, S. (2002). What keeps new teachers in the swim? *Journal of Staff Development*, Fall, 18-21.
- Borja, R. R., (2002). E-mentors offer online support, information for novice instructors. *Education Week*, (21)29, 12. Retrieved June 5, 2006, from <http://libproxy.library.unt.edu:2078/pgdweb?index=1&sid=1&srchmode=1&vinst=PROD>
- Boser U. (2000). A picture of the teacher pipeline: Baccalaureate and beyond. *Education Week Quality Counts*, 19(18), 17.
- Bradley, A. (1999). States' uneven teacher supply complicates staffing of schools. *Education Week*, 18(26), 1, 10-11.

- Brennan, S., Thames, W., & Roberts, R. (1999). In Kentucky: Mentoring with a mission. *Educational Leadership*, 56(8), 49-52.
- Brown, A. (2006). Telementoring: Honing new talent via the internet. *Network Journal*, 13(4), 60. Retrieved June 11, 2006 from <http://libproxy.library.unt.edu/2078/pgdweb?index=1&did=1024401831&SrchMode=1&si>
- Broughman, S. P. & Rollefson, M. R. (2000). *Teacher supply in the United States: Sources of newly hired teachers in public and private schools, 1987-88 to 1993-94: Statistical analysis report*. Washington, D.C. National Center for Education Statistics.
- Capa, Y., (2005). Factors influencing first-year teachers' sense of efficacy. (Doctoral dissertation, Ohio State University, 2005), *Dissertation Abstracts International*, 66, 01 A.
- Carroll, T., & Fulton, K. (2004). The true cost of teacher turnover [Electronic version]. *Threshold*, 16-17.
- Chase, B. (2000). Show us the money. *NEA Today*, 18(7), 5. Retrieved October 2, 2006, from http://www.findarticles.com/p/articles/mi_qa3617/is/200004/ai_n8890984
- Christenbury, L. (1995). Remembering the first days. In K. Jonson (Ed.), *Being an effective mentor: How to help beginning teachers succeed*. Thousand Oaks, CA: Corwin Press, Inc.
- Clement, M. (2002). Finding and keeping high-quality teachers. *Superintendents Briefing Book: Vital Information for school district leaders*, 1-14.

- Costa, A. L., & Garmston, R. J. (2002). *Cognitive coaching: A foundation for renaissance schools*. Norwood, MA: Christopher-Gordon Publishers, Inc.
- Darling-Hammond, L. (1997). *Doing what matters most: Investing in quality teaching*. New York: National Commission on Teaching & America's Future.
- Darling-Hammond, L. (2003). Keeping good teachers. *Educational Leadership*, 60(8), 6-13.
- Darling-Hammond, L., Chung, R., & Frelow, F. (2002). Variation in teacher preparation: How well do different pathways prepare teachers to teach? *Journal of Teacher Education*, Sep-Oct, 53(4), 286-303.
- Darling-Hammond, L., & McLaughlin, M. W. (1996). Policies that support professional development in an era of reform. In L. McLaughlin & I. Oberman (Eds.), *Teacher Learning: New policies, new practices*. New York: Teachers College Press.
- Dembo, M. H., & Gibson, S. (1985). Teachers' sense of self-efficacy: An important factor in school improvement. *The Elementary School Journal*, 86(2), 173-184.
- E-mentoring program connects seasoned pros with novices. (December 2005/ January 2006). *Copy Editor*, 90(4), 16.
- Eisenman, G., & Thornton, H. J. (1999). Telementoring: Helping new teachers through the first year. *Technological Horizons in Education (THE) Journal*, 26(9), 79-82. Retrieved October 15, 2006 from <http://libproxy.library.unt.edu:5304/citation.asp?tb=1& ug=sid+59D7197B>

- Evans, C. D. (2004). *A case study of the perspectives of three first-year teachers and their mentors on mentoring through the use of electronic mail*. Unpublished doctoral dissertation. University of Georgia, Athens.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain practice. *Teachers College Record*, 103(6), 1013-1055
- Fideler, E., & Haselkorn, D. (1999). *Learning the ropes: Urban teacher induction practices in the United States*. Belmont, MA: Recruiting New Teachers, Inc.
- Fulton, K., Yoon, I., & Lee, C. (2005). Induction into learning communities. Retrieved May 15, 2006 from http://www.nctag.org/documents/nctaf?NCTAF_Induction_Paper.2005.pdf
- Gibson, S., & Dembo, M. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology*, 76, 569-582.
- Gold, Y. (1996). Beginning teacher support: Attrition, mentoring, and induction. In T. J. Buttery, E. Guyton, & J. P. Sikula (Eds.), *Handbook of Research on Teacher Education* (pp. 548-594). New York: Simon & Schuster Macmillan.
- Gordon, S. P., & Maxey, S. (2000). *How to help beginning teachers succeed*. Alexandria, VA: ASCD.
- Guy, T. (2000). Telementoring: Shaping mentoring relationships for the 21st century [online] 27-37. Retrieved December 3, 2005 from <http://www-tcall.tamu.edu/erica/docs/mott/mentoring5.pdf>
- Halford, J. M. (1998). Easing the way for new teachers. *Educational Leadership*, 55(5), 33-36.

- Hall, B. W., Burley, W. W., Villerne, M. G., & Brockmeier, L. L. (1992). *An attempt to explicate teacher efficacy beliefs among first-year teachers*. Paper presented at the Annual Meeting of the American Research Association, San Francisco.
- Hare, D., & Heap J. L. (2001). *Effective teacher recruitment and retention strategies in the Midwest: Who is making use of them?* Naperville, IL: North Central Regional Educational Laboratory.
- Harris, J. (2006). Focus on technology online support for teacher induction. American Association of Colleges for Teacher Education (AACTE)
Retrieved August 5, 2006 from
http://www.aacte.org/programs/research/focus_online_support_teacher
- Harvard Graduate School of Education (2000). Teaching's next generation: What will it take to attract and keep new teachers? Retrieved July 3, 2006 from <http://www.gse.harvard.edu/news/features/johnson12012000.html>
- Hayes, J. L. (2006). A longitudinal study of the effects of a mentoring program on teacher performance, efficacy and retention. In J. R. Dangle (Ed.), *Research on Teacher Induction: Teacher Education Yearbook XIV* (pp. 213-241). Lanham, MD: Rowan & Littlefield.
- Heider, K. L. (2005). Teacher isolation: How mentoring programs can help. *Current Issues in Education* [On-line], 8(14). Retrieved October 2, 2006 from http://cie.asu.edu/volume8/number_14/index.html
- Heller, D. A. (2004). *Teachers wanted: Attracting and retaining good teachers*. Alexandria, VA: Association for Supervision and Curriculum Development.

- Henson, R. K. (2001, January). *Teacher self-efficacy: Substantive implications and measurement dilemmas*. Paper presented at the meeting of the Educational Research Exchange, College Station, Texas.
- Heppner, M. J. (1994). An empirical investigation of the effects of a teaching practicum on prospective faculty, *Journal of Counseling and Development*, 72, 500-509.
- Howard, T. C. (2003). Who receives the short end of the shortage? Implications of the U. S. teacher shortage on urban schools. *Journal of Curriculum and Supervision*, 18(2). 142-160. ERIC: EJ660835. Retrieved from http://eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel
- Hoy, A. K., (2000, April). *Qualitative and quantitative approaches to examining efficacy in teaching and learning*. Paper presented at the meeting of the American Educational Research Association, New Orleans.
- Huling-Austin, L. (1990). Teacher induction programs and internships. In W. R. Houston (Ed.), *Handbook of research on teacher education*. New York: Macmillan Publishing Company.
- Huling-Austin, L. (1992). Research on learning to teach: Implications for teacher induction and mentoring programs. *Journal of Teacher Education*, 43(3) 173-180.
- Hunt, K., (2005). E-mentoring: Solving the issue of mentoring across distances. *Development and Learning in Organizations*, 19(5), 7-10.
- Hutchison, C. B., & Jazzar, M. (2007). Mentors for teachers from outside the United States. *Phi Delta Kappan*, 88(10), 368-373.

- Ingersoll, R. M. (1998). The problem of out-of-field teaching. *Phi Delta Kappan*, 79(10), 773-778.
- Ingersoll, R. M. (2001). Teacher turnover and teacher shortages: An organizational analysis. *American Educational Research Journal*, 38(3), 499-534.
- Ingersoll, R. M., & Kralik, J. (2004). The impact of mentoring on teacher retention: What the research says. *Education Commission of the States*. Retrieved September 14, 2005 from <http://www.ecs.org/clearinghouse/50/36/5036.htm>
- Ingersoll, R. M. & Smith, T. M. (2003). The wrong solution to the teacher shortage. *Educational Leadership*, 60(8), 30-33.
- Intrator, S. (2006). Beginning teachers and the emotional drama of the classroom. *Journal of Teacher Education*, 57(3), 232-239.
- Johnson, S. M., Berg, J. H., & Donaldson, M. L. (2005). Who stays in teaching and why: A review of the literature on teacher retention. *The Project on the Next Generation of Teachers*. Harvard Graduate School of Education, 1-105.
- Johnson, S. M., Birkeland, S., Kardos, S. M., Kauffman, D., Liu, E., & Peske, H. G. (2001). Retaining the next generation of teachers: The importance of School-based support. *Harvard Education Letter*. 17, 6-8. Retrieved June 2, 2006 from <http://www.edletter.org/past/issues/2001-ja/support.shtml>
- Jonson, K. F. (2002). *Being an effective mentor: How to help beginning teachers succeed*. Thousand Oaks, CA: Corwin Press.
- Joyce, B. & Showers, B. (1982). The coaching of teaching. *Educational Leadership*, 40(1), 4-12.

- Kelly, K. (2001). *Teachers helping teachers*. Harvard Education Letter, 17, 5, University of Chicago Press.
- Khine, M. S., Yeap, L. L. & Lok, T. C. (2003). The quality of message ideas, thinking and interaction in an asynchronous CMC environment. *Educational Media International*, 115-125. Retrieved February 13, 2005 from <http://www.tandf.co.uk/journals>
- Lortie, D., (1975). *Schoolteacher: A sociological study*. Chicago: University of Chicago Press.
- Madewell, J., & Shaughnessy, M. F. (2003). An interview with Frank Pajares. *Educational Psychology Review*, 15(4), 375-397.
- Martin, S., & Robbins, K. (1999). Induction: the first five days. In M. Scherer (Ed.), *A better beginning: Supporting and mentoring new teachers*. (pp. 27-33). Alexandria, VA: Association for Supervision and Curriculum Development.
- Mather, M. A. (1997). Mentoring digital style. *Technology and Learning*, 18(4), 16-21.
- Mathison, C. (1996). The challenges of beginning middle and secondary urban school teachers. *Issues in Teacher Education*, 5(1), 5-18.
- Mehlinger, H. D., & Powers, S. (2002). *Technology and teacher education: A guide for educators and policymakers*. Boston, MA: Houghton Mifflin Company.
- Merrow, J. (1999). The teacher shortage: Wrong diagnosis, phony cures. *Education Week*, 19(6), 64-65.
- Moir, E. (1999). The stages of a teacher's first year. In M. Scherer (Ed.), *A better beginning: supporting and mentoring new teachers*. Alexandria, VA: ASCD. 19-23.

- Moir, E., Gless, J., & Barron, W. (1999). A support program with heart: The Santa Cruz project. In Scherer (Ed.), *A better beginning: Supporting and mentoring new teachers*. Alexandria, VA: ASCD. 106-115.
- Morris, L. V. (2004). Self-efficacy in academe: Connecting the belief and the reality. *Innovative Higher Education*, 28(3), 159-162.
- Mulholland, J., & Wallace, J. (2001) Teacher induction and elementary science teaching: Enhancing self-efficacy. *Teaching and Teacher Education*, 17 243-261.
- Muller, C. B. & Single, P. B. (1999). *Electronic mentoring: Issues to advance research and practice*. Paper presented at the meeting of the meeting of the International Mentoring Association, Atlanta.
- National Association of State Boards of Education (NASBE). (1998, October). *The numbers game: Ensuring quantity and quality in the teaching workforce*. Alexandria, VA: Author.
- National Center for Educational Statistics (NCES). (1999). *Teacher quality: A report on the preparation and qualifications of public school teachers*. Washington, DC: National Center for Educational Statistics.
- National Center for Educational Statistics (NCES). (2000). *Teacher supply in the United States: Sources of newly hired teachers in public and private schools, 1987-88 to 1993-94: Statistical analysis report*. Washington, DC: National Center for Educational Statistics.
- National Commission on Teaching and America's Future (NCTAF) (1996). *Doing what matters most: Teaching for America's future*. New York: National Commission on Teaching and America's Future.

National Commission on Teaching and America's Future (NCTAF) (1997). *Doing what matters most: Investing in quality teaching*. New York: NCTAF.

National Commission on Teaching and America's Future (NCTAF) (2002).

Unraveling the "teacher shortage" problem: Teacher retention is the key.

Washington, DC: Author. Retrieved September 14, 2006 from

<http://www.nctaf.org/>

National Commission on Teaching and America's Future (NCTAF) (2003). *No*

dream denied: A pledge to America's children. Washington, DC: Author.

Retrieved August 5, 2006 from <http://www.nctaf.org/>

National Commission on Teaching and America's Future (NCTAF) (2005).

Induction into learning communities, Washington, DC: Author. Retrieved July 4,

2006 from <http://www.nctaf.org/>

National Education Association (2002-2005). A better beginning: Helping new

teachers survive and thrive. *NEA New Teacher Support Initiative*

Retrieved September 25, 2005 from

<http://www.nea.org/teachershortage/betterbeginnings.html>

O'Neill, K. (1996). Telementoring: one researcher's perspective. Retrieved

September 15, 2006 from

<http://nsn.bbn.com/newsletters/newsfiles/newsletter12/telementoring.html>

O'Neill, D. K., & Harris, J. B. (2005). Bridging the perspectives and developmental

needs of all participants in curriculum-based telementoring programs. *Journal of*

Research on Technology in Education, 37(2), 111-129. Retrieved October 15,

2006 from <http://libproxy.library.unt.edu:2078/pqdlink?Ver=1&Exp=10->

[142011&FMT=7&DID=7](http://libproxy.library.unt.edu:2078/pqdlink?Ver=1&Exp=10-142011&FMT=7&DID=7)

- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543-578.
- Pajares, F. (1997). Current directions in self-efficacy research. In M. Maehr & P. R. Pintrich (Eds.) *Advance in motivation and achievement*, 10 (pp. 1-49). Greenwich, CT: JAI Press.
- Pan, D. T., & Mutchler, S. E. (2000). Mentoring beginning teachers: Lessons from the experience in Texas. *Southwest Educational Development Laboratory*. Retrieved September 25 from <http://www.sedl.org/pubs/policy23/1.html>
- Perez, S., & Dorman, S. M. (2001). Enhancing youth achievement through telementoring. *Journal of School Health*, 71(3), 122-123.
- Peterson, K. D. (1994). Collaborative Cultures: Seeking ways to reshape urban schools. *North Central Regional Educational Laboratory*. Retrieved October 14, 2006 from <http://www.ncrel.org/sdrs/areas/issues/educatrs/leadrsdp/le0pet.htm>
- Pintrich, P. R., & Schunk, D. H. (1996). *Motivation in education: Theory, research, and applications*. Englewood Cliffs, NJ: Merrill/Prentice-Hall.
- Portner, H. (2005). Success for new teachers. *American School Board Journal*, October, 30-33.
- President Clinton's Call to Action of American Education in the 21st Century. (1997). Retrieved December 30, 2006 from ED468585 http://eric.ed.gov/ERICWebPortal/Home.portal?_nfpb=true&_pageLabel=RecordDetails&ERICExtSearch_SearchValue_0=ED468585&ERICExtSearch_SearchType_0=eric_accno&objectId=0900000b80177420

- Price, M. A., & Chen, H. H. (2003). Promises and challenges: Exploring a collaborative telementoring program in a pre-service teacher education program. *Mentoring & Tutoring, Vol. 11*(1), 105-116.
- Public Interest Registry. (2003). *E-mail, non-profits, and the importance of relationship building*. Retrieved September 24, 2006 from <http://www.pir.org/resources/articles/gilbert>
- Richardson, M. K. (2003). Mentoring and Keeping new teachers. *Dissertation Abstracts International*, (UMI NO. 3090953).
- Riel, M., (2006). *Telementoring over the net: The real power of the Internet is the energy generated by human interaction*. Retrieved September 10, 2006 from <http://www.learn.org/circles/mentors.html>
- Rosenholtz, S. J. (1989). *Teachers' workplace: The social organization of schools*. New York, NY: Longman. Retrieved December 2, 2006 from <http://www.nwrel.org/scpd/re-engineering/rycu/ReferenceDetails.asp?>
- Sanders, W. L., & Horn, S. P. (1998) Research findings from the Tennessee Value-Added Assessment System (TVASS) database: Implications for evaluation and research. *Journal of Personnel Evaluation in Education, 12*(3), 247-256.
- Scherer, M. (Ed.). (1999). *A better beginning: Supporting and mentoring new teachers*. Alexandria, VA: ASCD.
- Scherer, M. (Ed.). (2003). *Keeping good teachers*. Alexandria, VA: ASCD
- Schlechty, P. C., & Vance, V. S. (1983). Recruitment, selection, and retention: The shape of the teaching force. *Elementary School Journal, 83*, 469-487.

- Shannon, D. M., & Davenport, M. A. (2001). *Using SPSS™ to solve statistical problems: A self-instruction guide*. New Jersey: Prentice-Hall
- Smith, R. D. (1993). Mentoring new teachers: Strategies, structures, and successes. *Teacher Quarterly*, 20(4), 5-18.
- Smith, R. M. (2003). The teacher shortage: Myth or reality? *Educational Horizons*, 146-152. Retrieved September 23, 2005 from <http://www.pilambda.org/horizons/v81-3/Ingersoll.pdf>
- Smith, T. M. & Ingersoll, R. M. (2004). What are the effects of induction and mentoring on beginning teacher turnover? *American Research Journal*, 41(3), 681-714.
- Spero, R. B. & Woolfolk Hoy, A. (2005). Changes in teacher efficacy during the early years of teaching: A comparison of four measures. *Teaching and Teacher Education*, 21(4), 343-356. Retrieved June 15, 2006 from http://libproxy.library.unt.edu:2096/science?_ob=ArticleURL&_udi=B6VD8
- Stansbury, K., & Zimmerman, J. (2002). Smart induction programs become lifelines for the beginning teacher. *Journal of Staff Development*, Fall, 10-17.
- Suler, J. (2004) Extending work group into cyberspace. Retrieved June 17, 2003 from: <http://www.rider.edu/~suler/psycyber/extendgrp.html>
- Tschannen-Moran, M., Woolfolk Hoy, A. & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, 68(2), 202-248. Retrieved October 2, 2006 from <http://libproxy.library.unt.edu:2078/pqdlink?Ver=1&Exp=10-01-2011&FMT=7&DID=33>

- Tschannen-Moran, M. & Hoy, A. W. (2000, April). *What is the value of understanding beliefs? An exploration of beliefs related to academic achievement*. Paper presented at the annual meeting of the American Research Association, Chicago.
- Tschannen-Moran, M. & Woolfolk Hoy. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and teacher education*, 17, 783-805.
- Retrieved June 22, 2006 from <http://www.MeganTM.com>
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2002, April). *The influence of resources and support on teachers' efficacy beliefs*. Paper presented at the meeting of the American Educational Research Association, New Orleans.
- U.S. Department of Education. (1997). *Seven priorities of the U.S. Department of Education* (Working Document). Retrieved July 19, 2006 from, <http://www.ed.gov/updates/7priorities>
- U.S. Department of Education. (2000). *Eliminating barriers to improving teaching*. Retrieved August 17, 2006 from, <http://www.ed.gov/updates/barriers>
- Veenman, S. (1984). Perceived problems of beginning teachers. *Review of Educational Research* 54, 143-178.
- Voke, H., (2002). Responding to the teacher shortage. In M. Scherer (Ed.), *Keeping good teachers* (pp. 3-11). Alexandria, VA: ASCD
- Wighton, D. J. (1993). *Telementoring: An examination of the potential for an educational network*. Retrieved August 20, 2006 from <http://www.tnellen.com/cybereng/mentor/what.html>

- Wong, H. K. (2003). Induction programs that keep working. In M. Scherer (Ed.), *Keeping good teachers* (pp. 42-49). Alexandria, VA: ASCD
- Wong, H. K. (2004). Induction programs that keep new teachers teaching and improving. *NASSP Bulletin*, 87 (638), 5-27. Retrieved August 1, 2006 from http://www.principals.org/publications/bulletin/bltn_o304_wong.cfm.
- Woolfolk Hoy, A. (2000). *Changes in teacher efficacy during the early years of teaching*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans. Retrieved November 20, 2005 from <http://www.coe.ohio-state.edu/ahoy/efficacy%2043%2022.pdf>
- Woolfolk, A., & Hoy, W. (1990). Prospective teachers' sense of efficacy and beliefs about control. *Journal of Educational Psychology*, 82(1), 81-91.
- Yost, R. (2002). I think I can: Mentoring as a means of enhancing teacher efficacy. *Clearing House*, 75(4), 195-197. Retrieved October 2, 2006 from http://libproxy.library.unt.edu:4256?DeliveryPrintSave.asp?tb=O&_ug=sid